Oireachtas Joint Committee on Transport and Tourism

Wednesday 25 September 2019

Submission from Julianstown and District Community Association

Mr Chairman, members of the committee

Thank you very much for inviting representatives of Julianstown and District Community Association to attend here today to give evidence about the heavy traffic and its effect on the village of Julianstown in County Meath.

Julianstown is a village of 600 people situated on the R132 road between Drogheda and junction 7 of the M1 motorway (see attached map). The R132 used to be the old N1 Dublin-Belfast road. In 2003 the M1 motorway opened taking through traffic around Drogheda. However, the traffic volumes remained high and continue to be grossly excessive for a small village.

While it might have been expected to alleviate traffic congestion in Julianstown the M1 has had little effect since (a) it remains the primary access route for traffic to South Drogheda and East Meath and (b) the area has seen very high population growth in the last decade with more planned. In fact even today there is enough zoned land in the Southern Environs of Drogheda to accommodate a population of more than 18,000 which is just short of the size of Sligo.

While there have been some suggestions that the heavy traffic is caused by toll-avoidance, this has not been borne out by technical studies on the traffic in the area.

According to a briefing prepared by the NRA in 2016 (see Annex 1).

> *It has always been recognised by the Authority, and borne out in traffic studies undertaken, that the old N1 (existing R132) route would continue to attract significant traffic volumes due to the commercial/residential traffic movements in and around Drogheda town, the movements to/from Drogheda, and the movements to/from Drogheda Port. The decision of the NRA Board to adopt the Toll Scheme noted that the existing R132 route would continue to operate as a toll free public road. A study carried out by the Authority in 2012 demonstrated that this toll strategy has been effective as the overall volume of toll avoidance rates on the M1 is relatively low at less than 3% through the length of the scheme.*

So today we are seeing Average Annual Daily Traffic (as measured by TII) in excess of 20,000 with weekday levels exceeding 22,000. According to TII's design manual for roads and bridges a type-2 dual carriageway is recommended to carry this level of traffic and not a village street.

Based on an analysis[1] of TII's network of traffic counters, Julianstown is the 16th busiest road in the country (86 roads in total including all motorways and national roads). It is busier than the M6, M8, M9, M17 and M18 and all of the National Roads apart from the N1, N6, N7, N8, N18 and N40). (See Annex 2 for detailed traffic statistics)

[1] Based on median AADT for all traffic counters on each road – 2018 data from https://www.nratrafficdata.ie

Under EU law the traffic noise in the village has been modelled to be 15 to 20 dB in excess of the WHO thresholds for human health. It is suspected that there is significant air pollution coming from the traffic, in particular NO2.

In a letter sent from Meath County Council to the Department of Transport, Tourism and Sport (DTTAS) on 14 March 2017, Mr Des Foley, Director of Services noted that the expected volume of traffic has grown significantly faster than was anticipated when the M1 was approved. He noted that the future growth of Drogheda and Laytown & Bettystown areas will further increase the pressure on the roads which pass through the village and that the council now believes it is imperative that work begins to find a solution to significantly ease traffic volumes to a level that befits a village street. He forwarded a 2015 study by Aecom which shows that a local bypass of Julianstown is the most effective solution compared to a proposed distributor road in Bryanstown and a new link to the M1. (See Annex 3)

Most recently in December 2018 Meath County Council submitted a draft preliminary appraisal for a Julianstown Bypass to DTTAS which looked at the cost benefit analysis of various proposed solutions. This document again recognises

- High journey times due to congestion
- Unsafe conditions for all road users, particularly pedestrians and cyclists
- Unhealthy environment due to air pollution, vibration and noise
- Lack of resilience of the transport network in north-east Meath given increased future demands.

and concludes that a Julianstown bypass is the preferred option based on a multi-criteria and cost benefit analysis. In fact the benefit to cost ration based on reduction of congestion alone is 4:1 with an €80 million saving achieved (Annex 4).

While JDCA acknowledges that public transport has a role to play in transport policy overall, Julianstown is a special case because the health and safety of residents is of paramount concern. No public transport strategy can solve the problems in Julianstown because a major portion of traffic travelling to Drogheda and East Meath passes through the village, including HGV traffic to the Port.

It clear that the R132 should be designated as a national route in light of the traffic volume and the fact that it remains a strategic access route to Drogheda and Laytown & Bettystown with a population in the region of 50,000. The upgrading to a national road can be done under section 10 of the Roads Act 1993 by ministerial order, a purely administrative act.

JDCA therefore asks as follows:

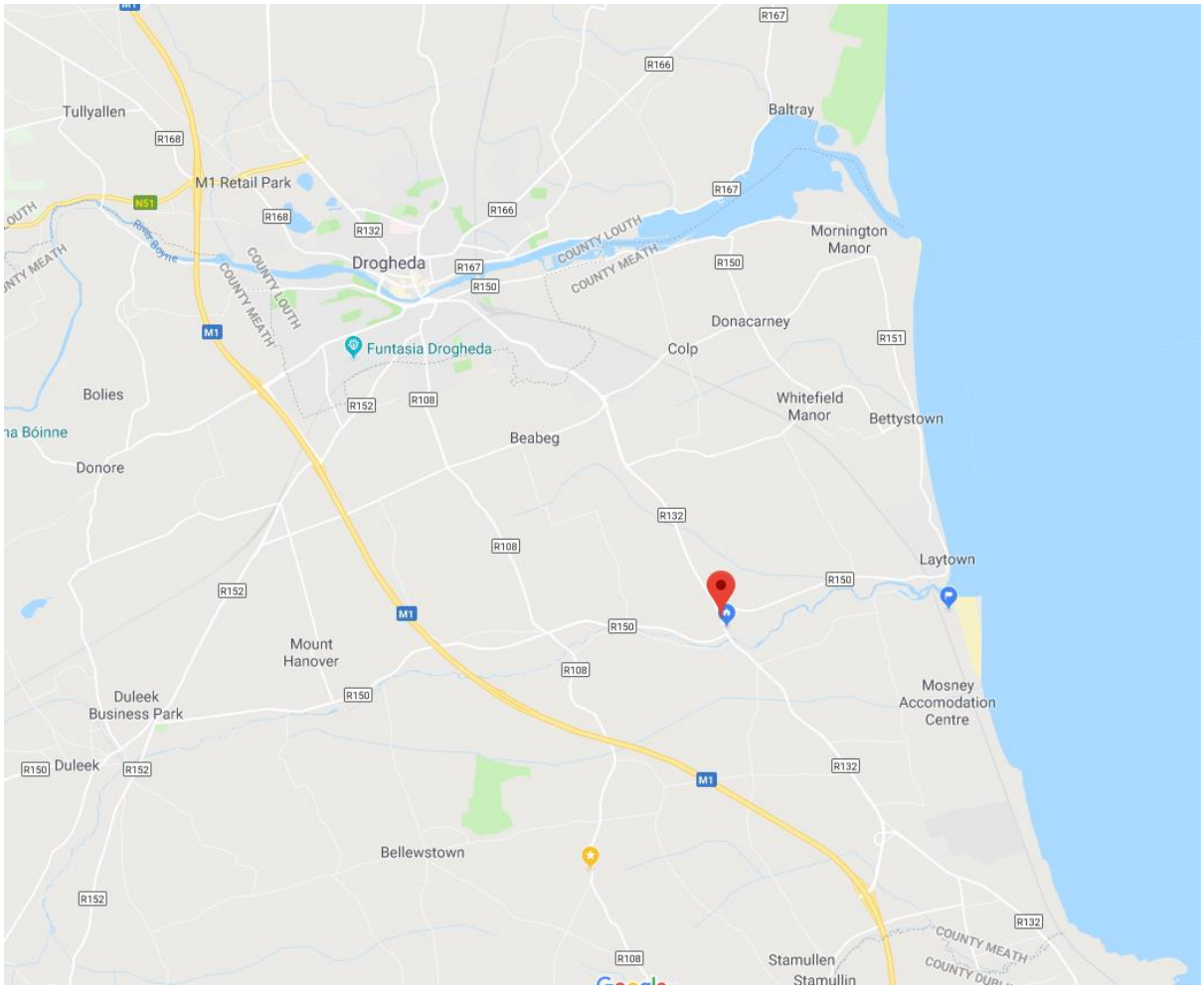
- Upgrade R132 to a national road
- Minister for Transport to put Julianstown on the capital plan and expedite it
- Meath County Council to adopt meaningful policies in the new County Development Plan to (a) monitor the traffic levels and the environment in Julianstown and (b) rapidly advance the plans for the Julianstown bypass (e.g. corridor selection to avoid granting planning permission etc).

Julianstown residents hope that the public authorities both at a local and national level meet their responsibilities to accommodate the population of Drogheda and East Meath with appropriate infrastructure.

At the moment Julianstown is being crushed by extreme traffic. We are now fully committed to driving a solution and if this means litigation then we are more than prepared to go down that path. We are confident that the way things have been done to date represent breaches of EU environmental law and of our fundamental right to a healthy environment. We are certain that if the administrative authorities fail to take action they will be forced to by the courts.

Thank you for the opportunity to put this evidence before the committee we look forward to answering the committee's questions.

Figure 1: Map showing location of Julianstown



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Our Ref: TRA 05 01 04 02

Transportation Department
14th March 2017.

Dominic Mullaney,
Principal Adviser,
Roads Division,
Department of Transport, Tourism & Sport,
25 Clare Street,
Dublin 2,
D02HC42

RE: R132 – Julianstown Village, County Meath

Dear Mr. Mullaney,

I am writing to you to highlight the worsening traffic conditions in Julianstown on the R132. Traffic volume and speed are sources of concern within the village given its location at the nexus of the R132 and the R150.

It is considered that the majority of residents in Drogheda and the coastal strip of Meath enter and exit the M1 Motorway at Junction 7 to the south of Julianstown. The M1 Toll Plazas Scheme was approved by An Bord Pleanala in 2002. The village has not benefitted from the opening of the M1 Motorway to the extent which would have been expected and traffic volumes are considerable in both directions daily. It is noted that the recorded Average Annual Daily Trips on the R132 south of Julianstown is now in the order of 20,000 AADT.

The M1 Toll Plaza Scheme 2001 predicted that the tolled and untolled traffic flows (AADT) on the old N1 north of Gormanston would be 15,955 and 22,765 in 2027 respectively. Using the average traffic growth rate from the TII counter on the R132 at Whitecross between 2013 and 2016, the 22,765 figure above will be exceeded in 2022.

The traffic figures in the M1 Toll Plazas EIS appear to have underestimated traffic growth in Julianstown and we consider these are approaching an unacceptably high level. Furthermore, any future growth of Drogheda and the Laytown & Bettystown areas will further increase the pressure on the roads which pass through the village. The Council believes that it is now imperative that work begins to find a solution to significantly ease traffic volumes to a level that befits a village street.

The current Meath County Development Plan 2013-2019o includes the following policies and objectives in relation to Julianstown:

***SP 3** To address traffic problems on the R132 Regional Road through Julianstown.*

MA OBJ 1 *To investigate the effectiveness of, and if appropriate, progress the implementation of, traffic management and traffic calming options and environmental measures through Julianstown village, in conjunction with the National Roads Authority, Department of Transport, Sport and Tourism and the National Transport Authority with a view to providing an enhanced and safer environment for the village.*

The M1 Toll Plazas EIS recommended the introduction of traffic calming measures on the main approach roads to and from the M1 interchanges to reduce speeds and any increases in severance or disruption to community facilities. The Council is proposing to investigate the effectiveness of further traffic management measures in Julianstown in 2017. It will also review its objectives for Julianstown in the course of the review of the County Development Plan 2019-2025 which is now underway.

A preliminary study was carried out in 2015 after a request from Meath County Council to the then NRA to examine the impact of some options aimed at alleviating traffic volumes in Julianstown using existing modelling tools. This included examination of the impact of the proposed distributor road between the R132 and junction 8 on the M1 included in the land use zoning objectives map of the Meath County Development Plan. In addition, two other notional road upgrades were also proposed for the testing of alternative options to relieve traffic through Julianstown. The 3 options considered in the report were as follows:

- Option 1: The distributor road to the south of Drogheda as included in the land use zoning objectives map of the Meath County Development Plan.
- Option 2: A notional local bypass of Julianstown
- Option 3: A notional link from the R150 to a new 'half diamond' interchange on the M1

A note was produced summarising the traffic modelling assessment and this is attached for information. Based on the model tests undertaken and an analysis of traffic impacts, toll revenue impacts and overall network performance, a local bypass of Julianstown (Option 2) emerged as the preferred solution in terms of reducing traffic volumes through the village of Julianstown and minimising impacts on the M1. The modelled impact was that the bypass would reduce the am peak hour traffic by 82% compared to 2% and 25% for options 1 and 3 respectively. The report suggested that a potential next step would be to undertake a design study to shortlist alignment options that are technically feasible.
While the scope to implement major investment programmes in areas such as transport is tightly constrained, the Council is minded to include an objective in the next development plan to provide a local bypass or other roads/measures aimed at reducing or removing through traffic in the village. We recognise that such a solution will require discussion with other agencies such as the Department of Transport, Tourism and Sport. Given the history of the development of the M1 and the subsequent addition of the M1 Toll Plaza Scheme, the Council consider it is also appropriate to discuss the matter with the TII. In January 2017 the Chief Executive of Meath County Council specifically raised the issue of Julianstown with the Minister of Transport, and I am now inviting the DTT&S and the TII to engage in discussions about advancing a solution to deal with the traffic situation. I would therefore be grateful if you would revert to me regarding the above and indicate your willingness to meet with myself and officials from the Council on this matter.

Yours sincerely,

Des Foley
Director of Services Transportation.

Encls: Aecom Technical Note

Project:	**NRA Traffic Management & Planning**	Job No:	**Task 13.4**
Subject:	**Julianstown Assessment**		
Prepared by:	**Dan Brennan**	Date:	**4th March 2015**
Checked by:	**Philip Shiels**	Date:	**4th March 2015**
Approved by:	**Shane Dunny**	Date:	**4th March 2015**

1. Overview

Meath County Council requested that the NRA examine the impact of a proposed east-west distributor road, to the south of Drogheda, on traffic volumes in Julianstown using existing modelling tools. The potential distributor road is included in the land use zoning objectives map of the Meath County Development Plan. In addition, a number of notional road upgrades were also proposed for the testing of alternative options to relieve traffic through Julianstown

This note summarises the traffic modelling assessment of the proposed transport measures within the vicinity of Julianstown, Co. Meath and the M1 National Route.

2. Existing Conditions

Julianstown is situated on the R132 to the south of Drogheda and approximately 4km north of Junction 7 on the M1. The M1 Dublin to Belfast route is tolled within the vicinity of Drogheda with a mainline toll located between Junction 7 and Junction 8 and tolls on the north facing slip roads of Junction 9.

There is currently a high level of traffic demand through Julianstown, with an AADT just below 19,000 vehicles on the R132. This is due to its location as an access route to Laytown and Bettystown and also as an access route to Drogheda. Previous studies by the NRA indicate that there is a low level of toll avoidance on the M1[1]. Traffic survey data indicated that approximately 3% of trips between the M1 south of Junction 7 and the M1 north of Junction 11 used the R132 to avoid tolls on the M1.

The R132 is a standard single carriageway road through Julianstown, with a speed limit of 50 kph through the village. The above is summarised on a location map presented in Figure 2.1.

[1] National Roads Traffic Management Strategy Technical Note: M1 Drogheda Slip Tolls, May 2012.

Figure 2.1: Existing traffic flows taken from 2014 NRA counter data

3. Analysis Tools

A local traffic model was developed by the NRA in 2012 to examine the impact of tolling options on the M1 on Drogheda and its environs. It was proposed that this model be used for the Julianstown assessment.

The model is a 2011 AM peak (08:00-09:00) VISUM traffic model of the study area shown in Figure 3.1.

Figure 3.1: M1 Drogheda Tolling Study – modelled area

An initial comparison of current traffic flows at key NRA count sites, from November 2014, in the local area with modelled flows was undertaken and is presented in Table 3.1.

Table 3.1: Comparison of November 2013 Traffic Counts with 2011 VISUM model flows (08:00-09:00)

	Northbound			Southbound		
Location	Count	Modelled	GEH	Count	Modelled	GEH
R132 Julianstown	642	566	3.1	1,019	985	1.1
M1 between Jn7 and Jn8	781	679	3.8	1,265	1,353	2.4

Based on the above comparison, it was determined that the M1 Drogheda Tolling Study model was appropriate for use in the Julianstown assessment.

4. Options Considered

An initial test was undertaken on the impact of a distributor road to the south of Drogheda as included in the land use zoning objectives map of the Meath County Development Plan. This option is referred to as Option 1 and an indicative alignment is shown in Figure 4.1.

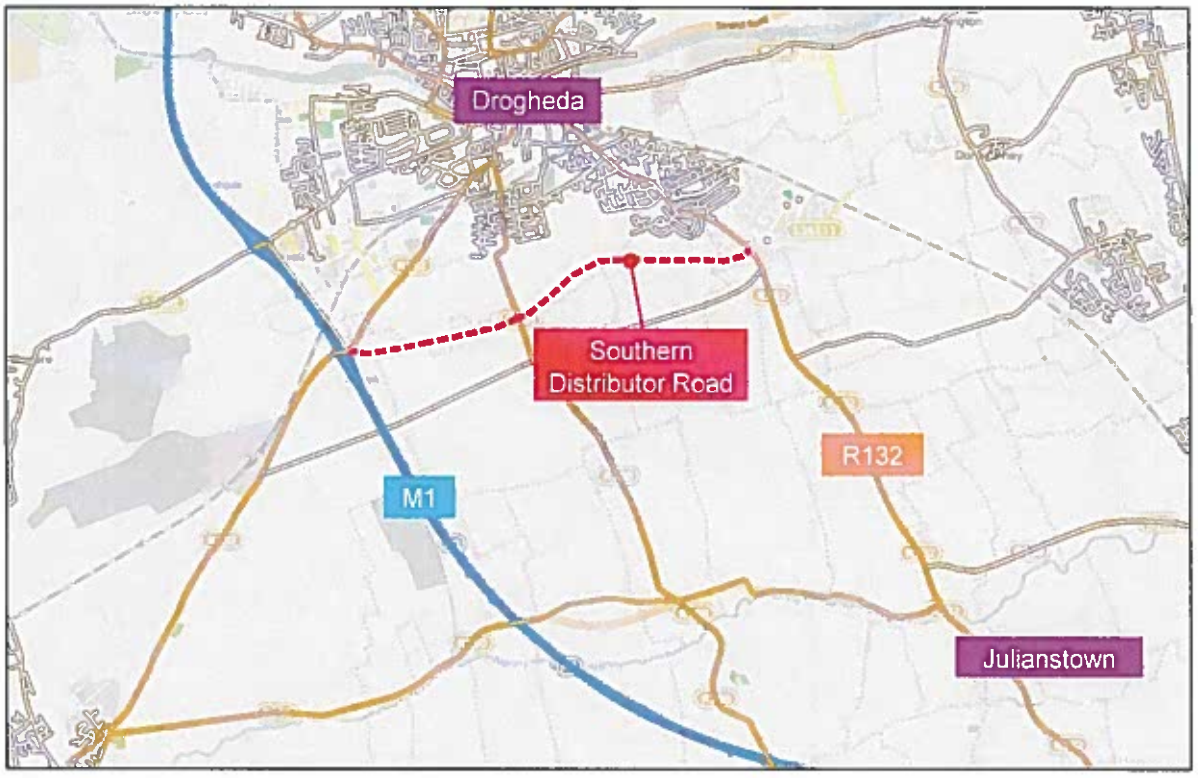


Figure 4.1: Option 1 - Indicative alignment of Drogheda Southern Distributor Road

Further tests were considered as follows:

- Option 2: A notional local bypass of Julianstown
- Option 3: A notional link from the R150 to a new 'half diamond' interchange on the M1

Indicative alignments of these options are presented in Figure 4.2 and 4.3. For all options, the new link roads were assumed to be standard single carriageway regional roads.

Figure 4.2: Option 2 – A notional local bypass of Julianstown

Figure 4.3: Option 3 – A notional link from the R150 to a new 'half diamond' interchange on the M1

5. Options Assessment

Traffic Impacts

In order to estimate the impacts of the proposals, all options were coded into base year 'Do Something' scenarios. Initially the impacts of each option on base year AM peak modelled traffic volumes on the R132 at Julianstown was assessed. The results of this assessment are presented in Table 4.1.

Table 4.1: Modelled AM peak traffic impacts in Julianstown

Location	Base	Option 1	Option 2	Option 3
R132 Julianstown	1,551	1,525	284	1,170
% difference	-	*-2%*	*-82%*	*-25%*

The proposed Drogheda SDR (Option 1) has minimal impacts on traffic volumes through Julianstown. This route is forecast have more local impacts on adjacent routes such as the R152 and R108, under existing traffic conditions. The impacts are demonstrated by means of a difference plot of the VISUM model scenarios presented in Figure 3.1 where increases in traffic are shown in green and decreases in traffic in red.

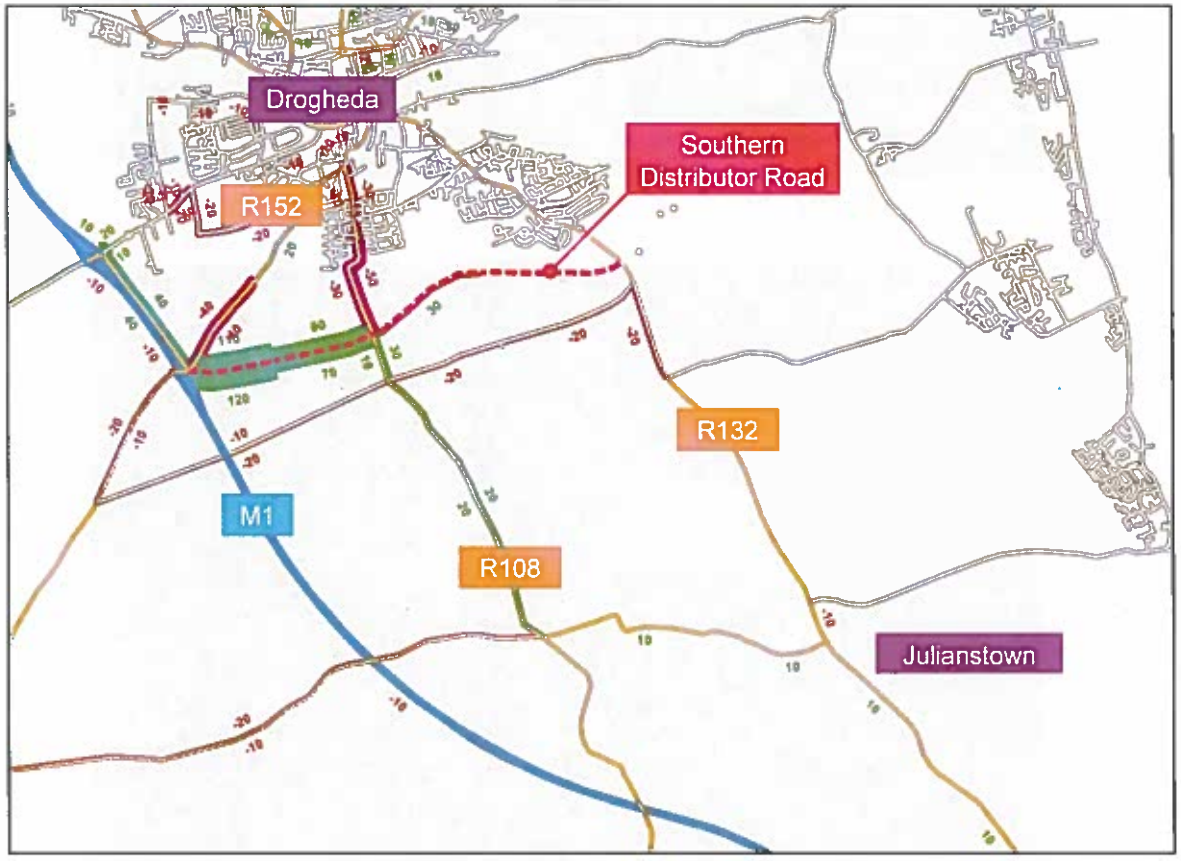


Figure 3.1: AM peak difference plot of Option 1 scenario less Base scenario

The option with the most significant reductions in modelled traffic flows is the local bypass (Option 2) which removes the majority of traffic from the existing R132 through Julianstown. The impacts are demonstrated by means of a difference plot presented in Figure 3.2.

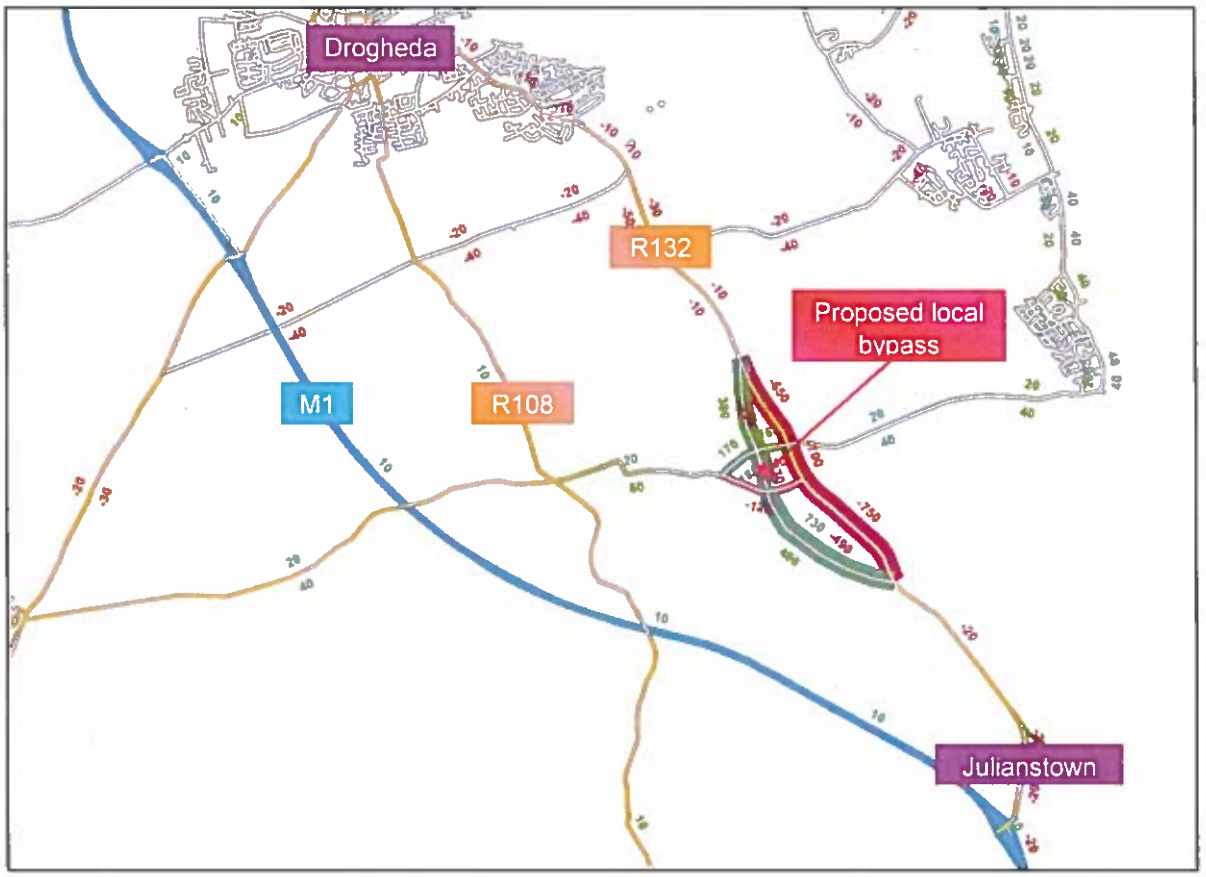


Figure 3.2: AM peak difference plot of Option 2 scenario less Base scenario

Option 3, which involves a new connection to the M1, is forecast to provide some relief to Julianstown, but not to the same extent as Option 2. Further detailed of the impacts of Option 3 are discussed below.

Toll Revenue Impacts

It was also necessary to estimate the impact of the potential options on annual toll revenue on the M1. Factors from AM peak to AADT traffic flow were derived from regression analysis of nearby NRA counter data as per the methodology outlined in NRA PAG Unit 16 'Data Analysis Techniques'. The modelled estimates of annual revenue at the M1 tolls are presented in Table 4.1.

Table 4.2: Modelled revenue impacts at M1 toll plazas (mainline & Jn slip tolls combined)

Location	Base	Option 1	Option 2	Option 3
AM Peak Traffic Flow	2,330	2,333	2,337	2,211
AADT	72,066	72,145	72,315	68,341
Annual Revenue Estimate	€26.3m	€26.3m	€26.4m	€24.9m
% difference	-	*+0.1%*	*+0.3%*	*-5.2%*

The model results indicate that the SDR (Option 1) and proposed local bypass of Julianstown (Option 2) will have negligible impacts on M1 toll revenue. The provision of a new interchange on the M1 and link road to Julianstown (Option 3) is forecast to reduce toll revenue by approximately 5%. This is due to the creation of a more attractive toll avoidance route between the M1 and south of Drogheda. This is demonstrated by the difference plot from the VISUM model presented in Figure 3.3.

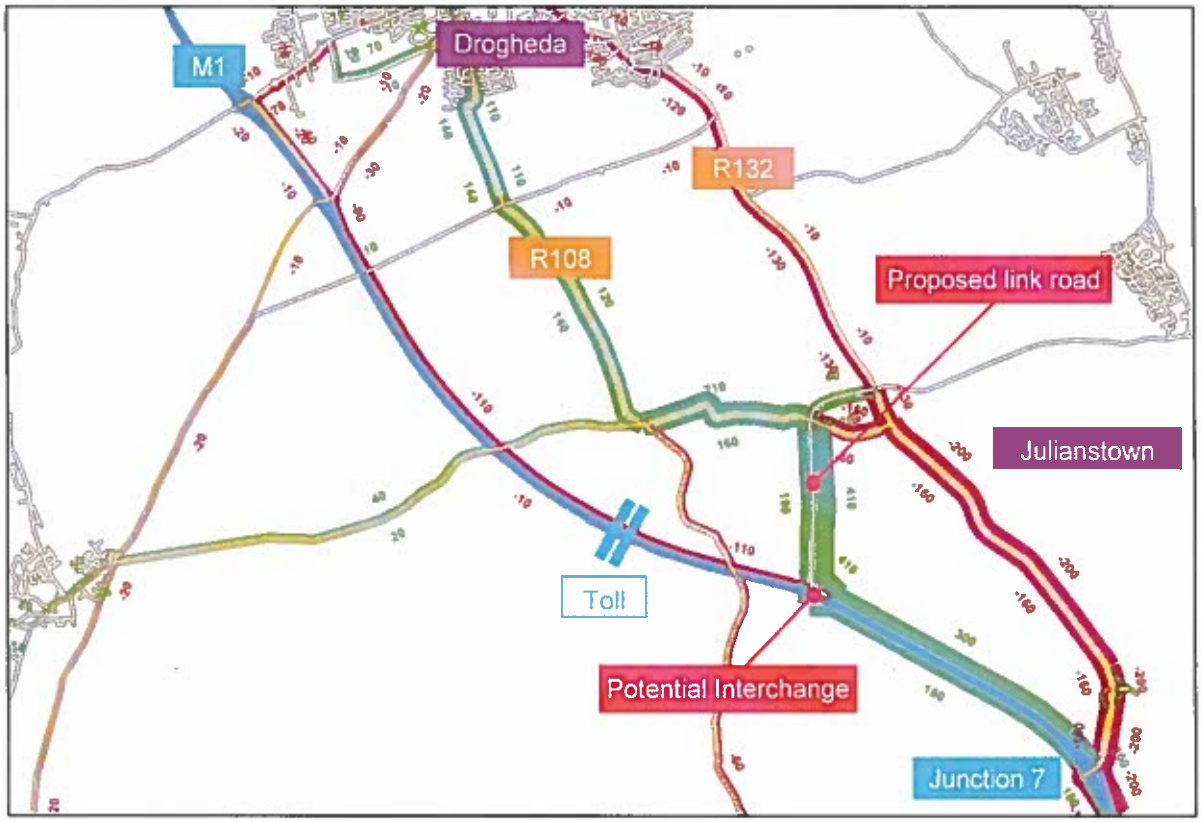


Figure 3.3: AM peak difference plot of Option 3 scenario less Base scenario

The difference plot above compares the Option 3 scenario against the Base scenario and shows increases in traffic in green and decreases in traffic in red. With a proposed new interchange to the north of Junction 7, a new access route to the M1 emerges between the proposed new interchange and link road, via the existing R108, and the south of Drogheda. This is forecast to result in a reduction in traffic through the mainline toll plaza on the M1 and hence a reduction in revenue.

Network Performance Impacts

A further check on the overall modelled performance of the road network was undertaken and is presented in Table 4.3.

Table 4.3: AM peak traffic model network statistics

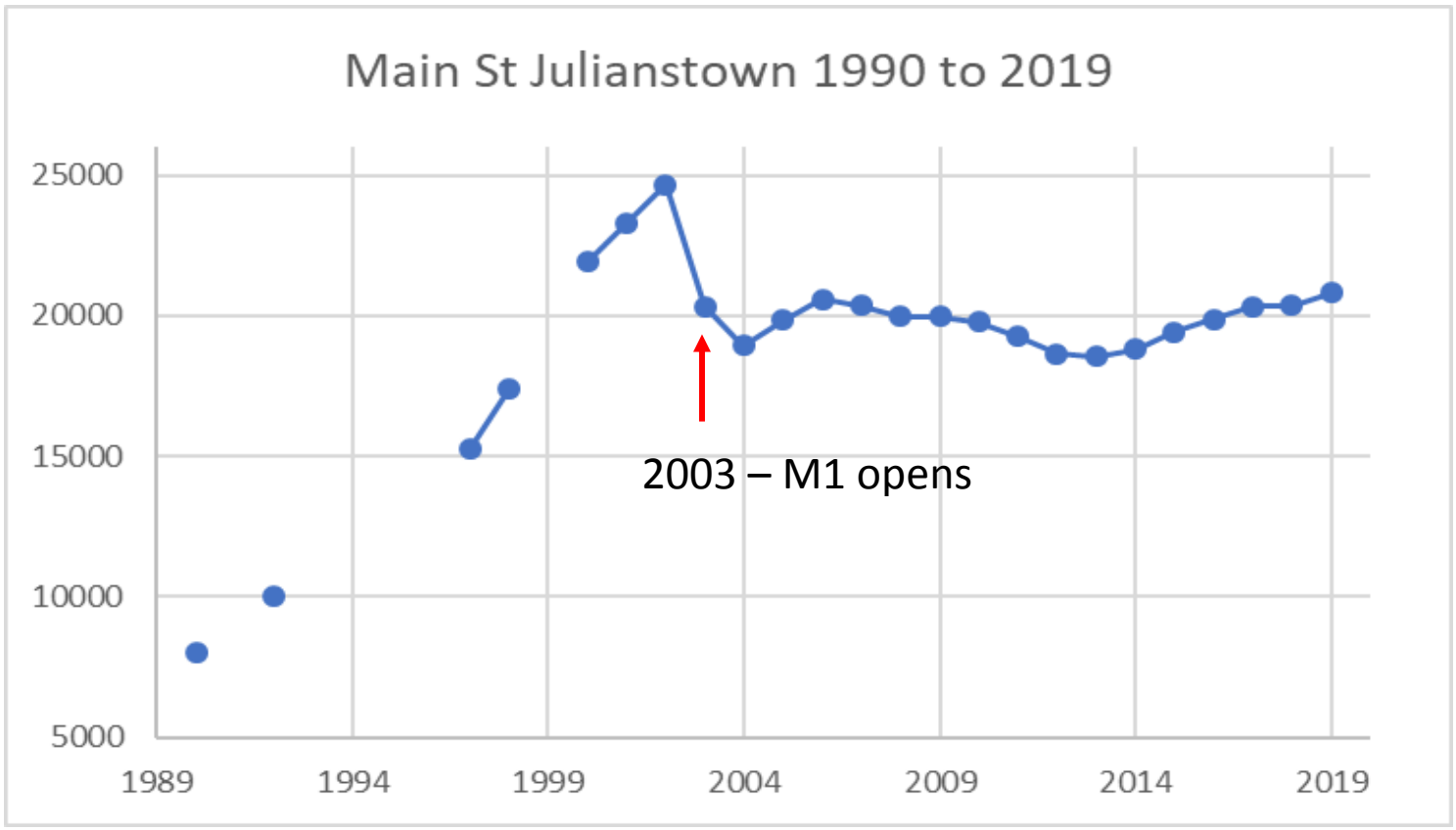
Location	Base	Option 1	Option 2	Option 3
Total Travel Distance (km)	874,517	874,945	870,506	870,789
Total Travel Time (hours)	15,348	15,301	15,230	15,199

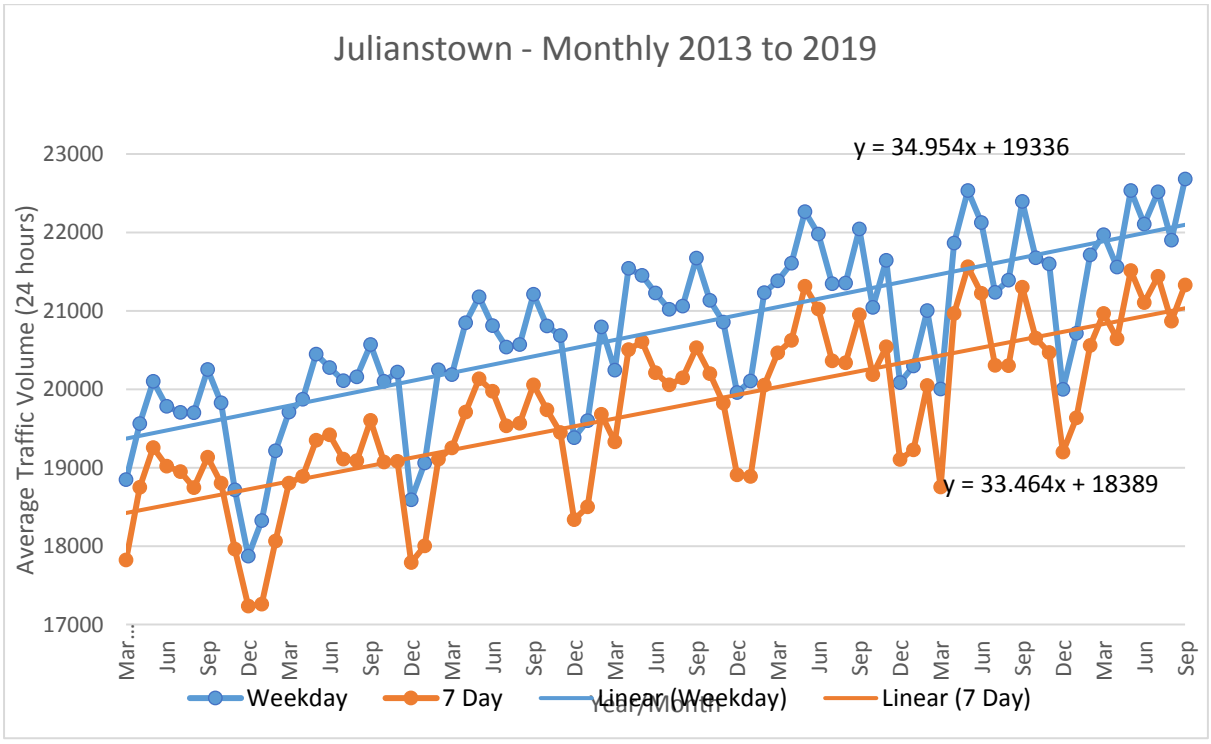
The statistics show that all options provide benefits in terms of travel time and distance savings, with Options 2 and 3 providing the most significant benefits.

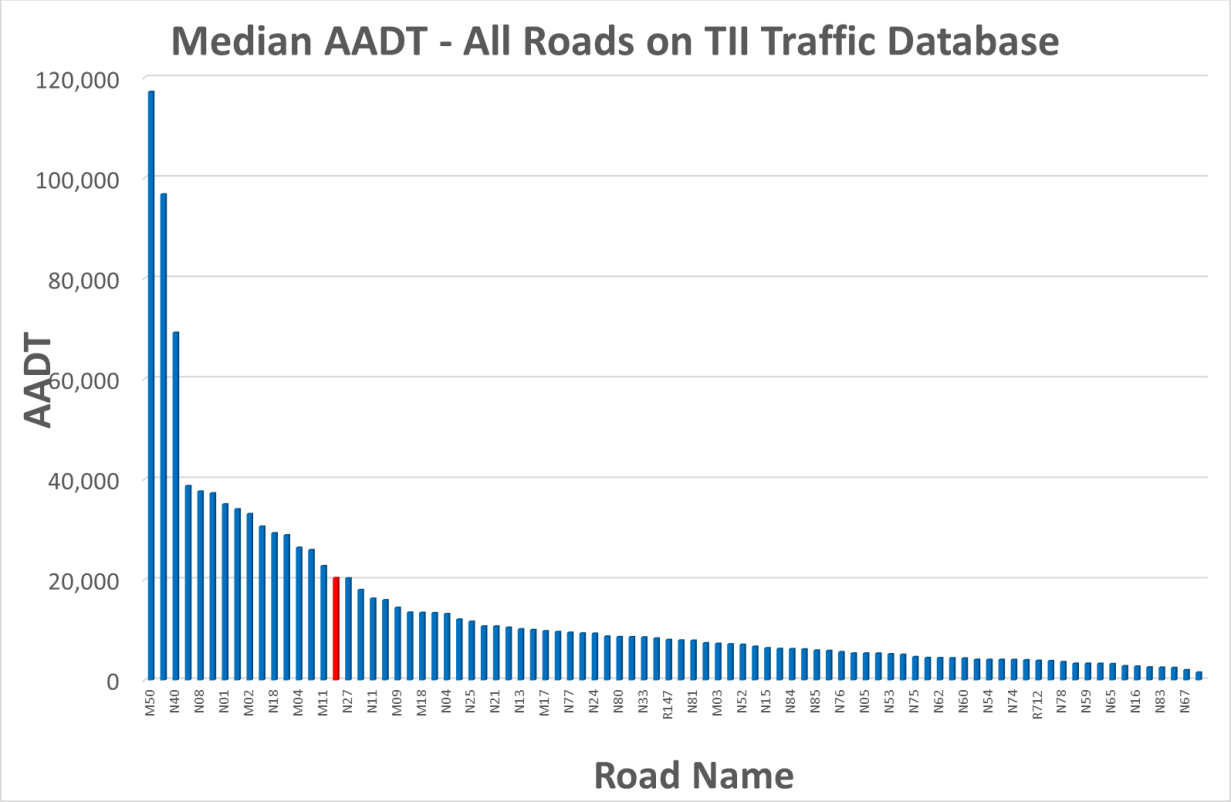
6. Conclusion

Based on the model tests undertaken and an analysis of traffic impacts, toll revenue impacts and overall network performance, a local bypass of Julianstown (Option 2) emerges as a preferred solution in terms of reducing traffic volumes through the village of Julianstown and minimising impacts on the M1. A potential next step would be to undertake a design study to shortlist alignment options that are technically feasible.

Annex 2 – Traffic statistics






Median AADT - All Roads on TII Traffic Database
AADT
120,000
100,000
80,000
60,000
40,000
20,000
0
M50 N40 N08 N01 M02 N18 M04 M11 N27 N11 M09 M18 N04 N25 N21 N13 M17 N77 N24 N80 N33 R147 N81 M03 N52 N15 N84 N85 N76 N05 N53 N75 N62 N60 N54 N74 R712 N78 N59 N65 N16 N83 N67
Road Name

Position	Road	Median AADT
1	M50	117,159
2	N07	96,741
3	N40	69,210
4	N32	38,681
5	N08	37,577
6	N06	37,232
7	N01	35,035
8	M01	34,049
9	M02	33,098
10	M20	30,602
11	N18	29,270
12	M07	28,874
13	M04	26,401
14	R108	25,932
15	M11	22,742
16	**R132**	**20,366**
17	N27	20,304
18	M06	17,983
19	N11	16,252
20	N20	15,932
21	M09	14,437
22	N31	13,482
23	M18	13,443
24	M08	13,382
25	N04	13,191
26	N14	12,104
27	N25	11,670
28	N22	10,729
29	N21	10,710
30	R445	10,485
31	N13	10,165
32	N02	10,027
33	M17	9,768
34	N03	9,627
35	N77	9,478
36	N17	9,323
37	N24	9,287
38	R148	8,709
39	N80	8,616
40	N10	8,605
41	N33	8,548
42	N71	8,335
43	R147	8,033
44	N26	7,928
45	N81	7,889
46	N28	7,385
47	M03	7,274

Position	Road	Median AADT
48	R420	7,181
49	N52	7,087
50	N61	6,690
51	N15	6,395
52	N56	6,256
53	N84	6,222
54	N69	6,159
55	N85	5,923
56	N58	5,846
57	N76	5,599
58	N51	5,348
59	N05	5,344
60	N72	5,332
61	N53	5,194
62	N30	5,077
63	N75	4,639
64	N23	4,449
65	N62	4,427
66	N86	4,393
67	N60	4,356
68	N12	4,106
69	N54	4,091
70	N68	4,075
71	N74	4,061
72	N63	4,000
73	R712	3,895
74	N55	3,830
75	N78	3,650
76	N73	3,320
77	N59	3,318
78	R639	3,290
79	N65	3,237
80	R446	2,814
81	N16	2,736
82	N70	2,589
83	N83	2,522
84	N66	2,469
85	N67	2,035
86	N87	1,543

An Roinn Iompair Turasóireachta agus Spóirt
Department of Transport, Tourism and Sport

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Minister@dttas.ie

Date: 19/10/2016

Our Ref: SR/16/13268

Deputy Imelda Munster
Constituency Office
Unit 6, 84 West St
Drogheda
Co. Louth

Dear Deputy Munster

Thank you for your recent correspondence regarding tolls on sliproads in Drogheda. Your letter and emails follow on from our exchange on the matter during Priority Questions on 19 July and again following the Transport Committee meeting on 5 October.

As I explained in my reply to your PQ of 19 July, as Minister for Transport, Tourism & Sport I have responsibility for overall policy and funding in relation to the national roads programme. The planning, design and operation of individual roads (including the M1) is a matter for Transport Infrastructure Ireland (TII) under the Roads Acts 1993 to 2015 in conjunction with the local authorities concerned.

Furthermore, the statutory power to levy tolls on national roads, to make toll bye-laws and to enter into agreements relating to tolls on national roads is vested in Transport Infrastructure Ireland under Part V of the Roads Act 1993 as amended. The contractual arrangements relating to M1 tolls are, therefore, matters for TII.

Arising from our contacts on the issue of the Donore toll ramps, TII briefed my Department on the rationale for the 2002 Toll Scheme and the findings of a 2012 study which examined the implications of changing the tolling arrangements. TII's briefing is included in the attached note which indicates that TII will be updating the 2012 study, taking into account any changes in traffic volumes and patterns.

An Roinn Iompair Turasóireachta agus Spóirt

Department of Transport, Tourism and Sport

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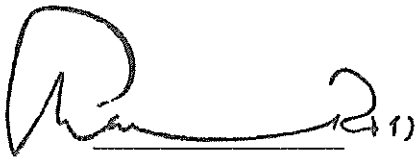
Yours sincerely,



Minister Shane Ross
Minister for Transport Tourism and Sport

The Minister is a Designated Public Official under the Regulation of Lobbying Act, 2015 (details available on www.lobbying.ie)

TII Briefing on tolling on Donore road ramps on the M1

The rationale for the 2002 Toll Scheme

The tolling strategy was designed to minimise diversions off the M1 and to minimise traffic impacts on local roads. Therefore the tolls on the north facing slip ramps at Donore were installed to protect the residents of Drogheda from any 'rat-running' that may occur due to traffic, particularly northbound, that may wish to avoid the mainline toll plaza at Balgeen. In addition, the presence of the ramp plazas at Donore, discourage people migrating to/from the N2 road to avoid the mainline toll plaza. Similar ramp tolling arrangements to those at Donore exist on the M4 Kinnegad to Kilcock toll road where ramp plazas are provided on the west facing ramps at the Enfield grade separated junction and on the M8 Rathcormac/Fermoy toll road where the north facing ramps of Corrin grade separated junction are tolled. In all cases the traffic studies undertaken identified that in the absence of the ramp tolls significant diversion from the mainline toll would occur.

When the NRA adopted the Toll Scheme for the M1 Northern motorway in June 2002, it incorporated a provision on the recommendation of the independent inspector appointed, to ensure that there was no 'disincentive' to people who wished to travel into the town of Drogheda. The following is an extract from the Authority's adoption of the Toll Scheme on the M1;

> *"b) provide that, where road users exit the toll road having made a toll payment and within a short period, e.g. three hours, re-enter the toll road to continue on their journey in the same direction of travel, a second toll payment will not be required."*

In effect, this means that toll users travelling northbound for example, having paid the toll at Balgeen, can exit the Motorway at Donore to visit Drogheda, and provided that they return to Donore to continue their journey northbound within a three hour period, may pass through the northbound on-ramp at Donore toll free. A similar three hour stopover provision exists on the M4 Kinnegad to Kilcock toll road.

The M1 Northern Motorway to the west of Drogheda forms part of the core Trans-European Transport Network (TENT) from Northern Ireland to Dublin. It is a part of the strategic national road network intended to cater for interurban and inter-regional traffic rather than short locally generated trips. The M1 motorway in the vicinity of Drogheda is currently carrying 38,000 vehicles daily and provides an important benefit and relief to the town of Drogheda.

It has always been recognised by the Authority, and borne out in traffic studies undertaken, that the old N1 (existing R132) route would continue to attract significant traffic volumes due to the commercial/residential traffic movements in and around Drogheda town, the movements to/from Drogheda, and the movements to/from Drogheda Port. The decision of the NRA Board to adopt the Toll Scheme noted that the existing R132 route would continue to operate as a toll free public road. A study carried out by the Authority in 2012 demonstrated that this toll strategy has been effective as the overall volume of toll avoidance rates on the M1 is relatively low at less than 3% through the length of the scheme.

The NRA entered into a contract with the PPP Company, Celtic Roads Group (Dundalk) Ltd. (CRG). This contract provided for:

- construction, operation and maintenance of Dundalk bypass, a 11 km length of motorway;
- operation and maintenance of 42 km of the existing M1 motorway; and
- operation of the Drogheda Tolling Facilities at Balgeen.

In accordance with the contract entered into with CRG, they are entitled to charge tolls in line with the approved Toll scheme which provides for mainline and slip ramp tolls. The PPP contract was signed on the 5th February 2004 and will extend for 30 years from that date.

Implications of altering the toll strategy

In 2012 following representations, the Authority carried out a study to understand the impact of removal of the tolls at the north facing slip roads at the M1 Junction 9 at Donore. Data on travel patterns and toll avoidance was collected to inform the study. The following two scenarios were studied.

1. **Scenario 1: Remove ramp tolls only**
2. **Scenario 2: Remove ramp tolls, but increase mainline toll**

Scenario 1: Remove ramp tolls only

The study showed that removal of the slip tolls would lead to diversions from the M1 to this junction to avoid the mainline toll and attract traffic that currently avoids the junction because of tolling. North facing ramp flows would increase from 3,000 to 18,800 vehicles per day leading to a significant increase in light and heavy vehicular traffic on both the Donore and Duleek roads (R152). The residents adjacent to these roads would experience higher levels of congestion, and associated negative impacts on the road pavement, air quality, road safety and noise. These roads do not have the capacity to carry the additional 15,800 vehicles per day.

It would also result in the creation of a toll avoidance route on the R132 through Julianstown, increasing the traffic on the southern environs of Drogheda by 4,000 vehicles per day. The study also indicated that removal of the tolls leads to impacts on the N2 corridor. Traffic currently on the N2 towards Slane and Ardee to gain access to the M1, would reroute via the R152 to join the M1 at Junction 9 (Donore).

This measure would also reduce traffic on the M1 mainline toll by approximately 4,500 vehicles per day. Annual toll revenue was forecast to reduce by €6.4 million per annum with the removal of slip tolls. Accordingly the State would have to pay between €6 and €7 million in compensation to the PPP Company until 2034 with the amount increasing every year.

Scenario 2: Remove ramp tolls, but increase mainline toll

This option studied the implications of the removal of slip tolls accompanied by a mainline toll increase so as to reduce or eliminate the amount of compensation payable to the PPP Company. The study tested removal of slips toll together with an increase in mainline toll of between 10% and 50%. North facing ramp flows would increase from 3,000 to between 19,000 and 20,700 vehicles per day leading to a significant increase in light and heavy vehicular traffic on both the Donore and Duleek roads (R152).

Increasing the mainline tolls however induces an increased level of diversion off the M1, decreasing the volume of toll paying traffic on the mainline. In order to achieve revenue neutrality and to avoid the State having to make any payment to the PPP Company it is estimated that the mainline toll would have to be increased by between 40% and 60%.

The level of diversion of traffic on to the local road network for **Scenario 2** is marginally greater than for **Scenario 1** and the associated negative impacts on the local road network also would be marginally greater than those outlined for **Scenario 1.**

Summary

Both **Scenario 1** and **2** outlined above have implications for TII because the Authority would be contractually required to compensate the PPP Company for any losses arising out of any change to the tolling arrangements. TII is not in a position to underwrite the loss in income that would arise consequent to a TII instruction for the removal of the ramp tolling at Donore interchange. TII would not consider it reasonable for the State to pay this and the only possible course of action available to the Authority would be to increase mainline tolls.

However any change to the tolling regime would not be a matter for TII alone. There would have to be political support for the change and a new Toll Scheme would be required. It is likely a new Environmental Impact Statement would be required and need to be approved. There may be a requirement to consult the European Commission and seek approval. A public hearing and Inspector's report would be required, before a new Toll Scheme could be adopted, and there would likely to be opposition from those who would be affected by any new arrangement causing increased diversions from the M1 and increased traffic from the Donore Road Ramp on to the local road network.

TII's primary function, under the Roads Act 1993, is 'to secure the provision of a safe and efficient network of national roads'. As such the Authority has no input into the manner in which the both Meath and Louth County Councils have facilitated the introduction of large retail parks on either side of Drogheda along non-national roads. This development and any resulting impacts such as potential traffic congestion are a matter for the local authority. A Traffic Impact Assessment would normally be carried out for such developments in order to inform the planning authority's decision making processes prior to granting a planning approval. The M1 tolling arrangement was in place prior to the two retail parks being developed.

TII understands that the local authority has included a new crossing of the Boyne River in local area plans. While these plans may be some time off implementation, they may alleviate some local traffic issues which the development of the M1 Northern Motorway was not designed to address.

Over the coming months, TII will update the 2012 study, taking account of any changes to traffic volumes and traffic patterns and to revise the estimates of the compensation required to the PPP Company for the different scenarios discussed above. In addition the new study will examine travel time variations on the old N1 (R132) through Drogheda town.

Julianstown R132

Preliminary Business Case

Prepared for: Meath County Council

Date: December 2018

Prepared for:

Meath County Council as a *'Preliminary Business Case'* for the R132 Julianstown Traffic Alleviation Project. This report is compliant with Common Appraisal Framework standards and Circular RW 06/2018,

Prepared by:

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Quality Information

Revision History

Table QI.1: Revision History

Revision	Revision Date	Details	Name	Positions
V.01	20/12/2018	Draft	Catherine Murray	Associate Director
V.02	21/12/2018	Draft	Catherine Murray	Associate Director

Quality Control

Table QI.2: Quality Control

Prepared By:	Checked By:	Approved By:
-	-	-
Catherine Murray	Philip Shiels	Shane Dunny

Executive Summary

AECOM Imagine it. Delivered.

Executive Summary

This report presents the *'Preliminary Business Case'* for the proposed Julianstown Bypass and satisfies the Stage 1 Pre-Appraisal/Preliminary Appraisal requirements of the DTTaS Common Appraisal Framework (2016). The purpose of investing in a relief road is to:

- Alleviate the impact of high level traffic demand travelling through Julianstown village, which currently has an Average Annual Daily Traffic (AADT) count of over 20,000 vehicles
- Improve safety conditions for all road users, but particularly for active modes of transport (pedestrians and cyclists) and mobility within the village
- Contribute to health benefits, with reductions in air pollution, vibration and noise
- Reduce journey time on the R132, thereby increasing journey time reliability
- Improve resilience of the transport network in north-east Meath, given the likely increased future demand on transport networks.

A bypass was not the only solution explored in this analysis. Four solutions or options were assessed, along with a 'do nothing' scenario;

- Option 1: a 'do nothing', or baseline scenario/option
- Option 2: east-west distributor road to the south of Drogheda
- Option 3: local bypass of Julianstown
- Option 4: new link road from the M1 to the R132 north of Julianstown
- Option 5: investment in other transport modes.

It should be noted that this preliminary business case relies on traffic modelling that AECOM undertook in 2015 following a request from Meath County Council to examine the impact of potential solutions to the traffic volumes in Julianstown. Should the scheme progress an update of the traffic modelling task will likely be required. Our analysis suggests that there is a *primae facie* case for 'doing something' to address the traffic volumes in Julianstown, with positive benefit to cost ratios for all the road construction options, ranging from a low estimate of 1.56 when calculated for 30 years of the road's life to the highest estimate of BCR value of 5.8 for one of the Options, when calculated for 60 years of benefits. These benefits are described as preliminary, taking into account time savings only, and therefore can be considered very conservative.

Option 3, the bypass of Julianstown emerged as the preferred option in both the Multi-criteria Analysis and preliminary cost benefit analysis, although it should be noted that the public transport investment option was not fully costed at this time.

Table 1. Summary of Preliminary Multi-criteria Analysis and Cost Benefit Ratio Results

		Options/Scenario				
Category	Criteria Description	I	II	III	IV	V
Economy	**Transport Efficiency and Effectiveness:** Reducing journey times	2	5	7	5	4
	Wider Economic Impacts: Reducing transport costs	3	5	5	5	4
	Transport Reliability and Quality: Improving congestion	3	5	5	5	5
Safety	**Collision Reduction:** Road Safety Authority guidelines	4	5	5	4	4
	Security: Removing safety issues for all road users	3	4	7	5	5
Environment	**Air Quality**: Removes emissions from urban environment	3	5	5	4	5
	Noise and Vibration: Removes noise and vibrations from Village.	2	4	7	5	4
	Landscape and Visual Quality:	3	4	5	4	4
	Biodiversity: Natura 2000 sites, particular habitats.	4	4	4	4	4
	Cultural, Archaeological, Architectural Heritage:	2	4	6	4	4
	Land Use: Impact upon existing land uses	4	3	3	3	3
	Water Resources: Effect on water courses	4	4	4	4	4
Accessibility & social inclusion	**Vulnerable Groups:** access to schools	3	4	6	5	4
	Deprived Geographical Area: n/a	4	4	4	4	4
Integration	**Transport Objectives:** Strategic Connectivity	2	4	3	4	5
	Land Use Integration: Local planning objectives	3	4	5	5	7
	Geographic Integration: Enhanced regional accessibility	3	4	4	4	7
	Integration with other Government policies: Compatibility with wider policy	4	4	5	4	4
Physical Activity	**Opportunities for pedestrian and cyclists**	3	4	5	5	5
Benefit to Cost Ratio	30 Year Appraisal		1.56	3.9	3.35	Not
	60 Year Appraisal		2.25	5.8	4.28	calculated

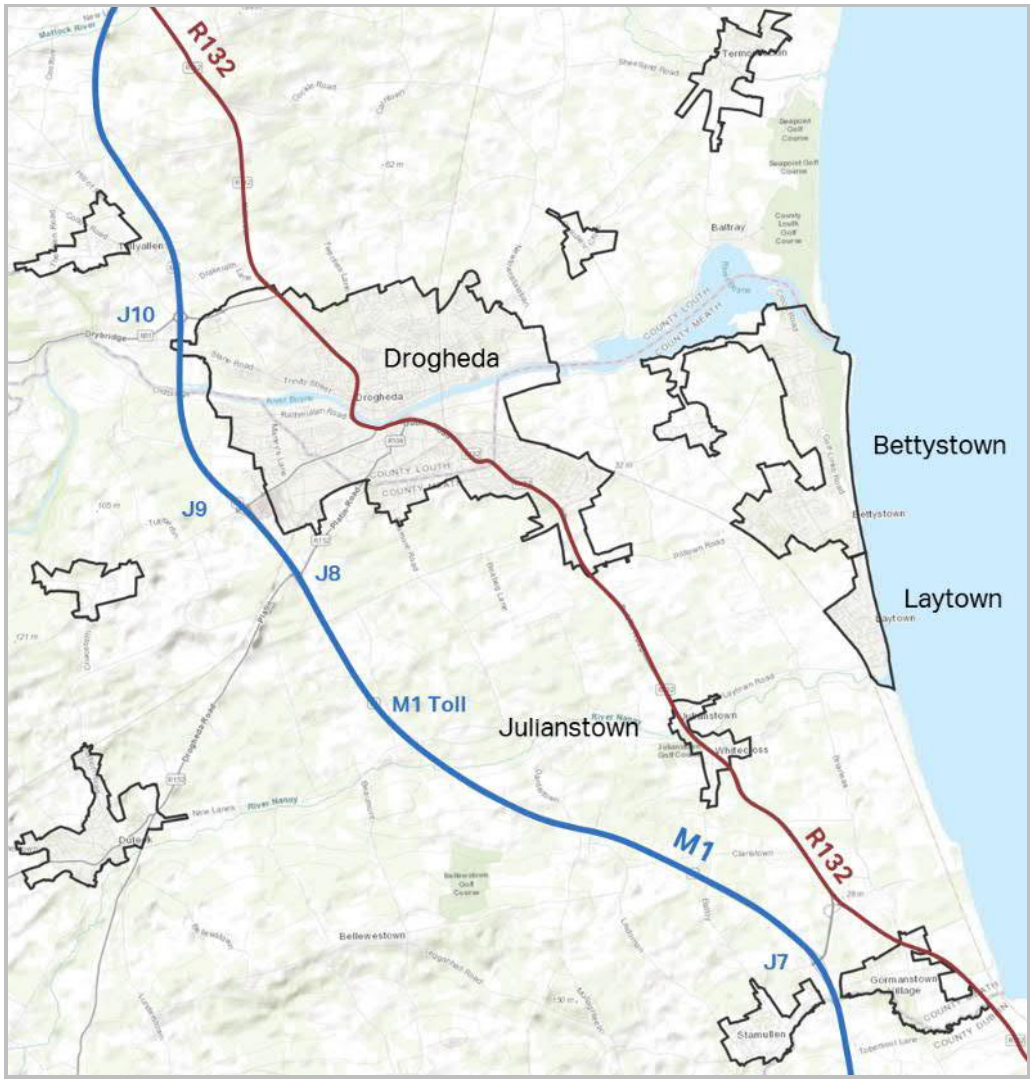
Contents

1. Introduction

Meath County Council wants to resolve the issues arising from high traffic volumes in Julianstown village, to the north east of the county. The Council is determining whether a sufficiently good prima facie case exists for considering a relief road around the village, which emerged as a preferred option in earlier analysis.

A Stage 1 – Preliminary Appraisal of alternative options is required to aid the decision. This involves using multi-criteria to analyse alternative options, as set out in the Public Spending Code and Common Appraisal Framework. We assume the cost of the project is between €5million and €20 million. Note this is an indicative initial project cost range, as no detailed design nor confirmed routes have been selected.

Figure 1. Julianstown and nearby settlements of Laytown, Bettystown and Drogheda

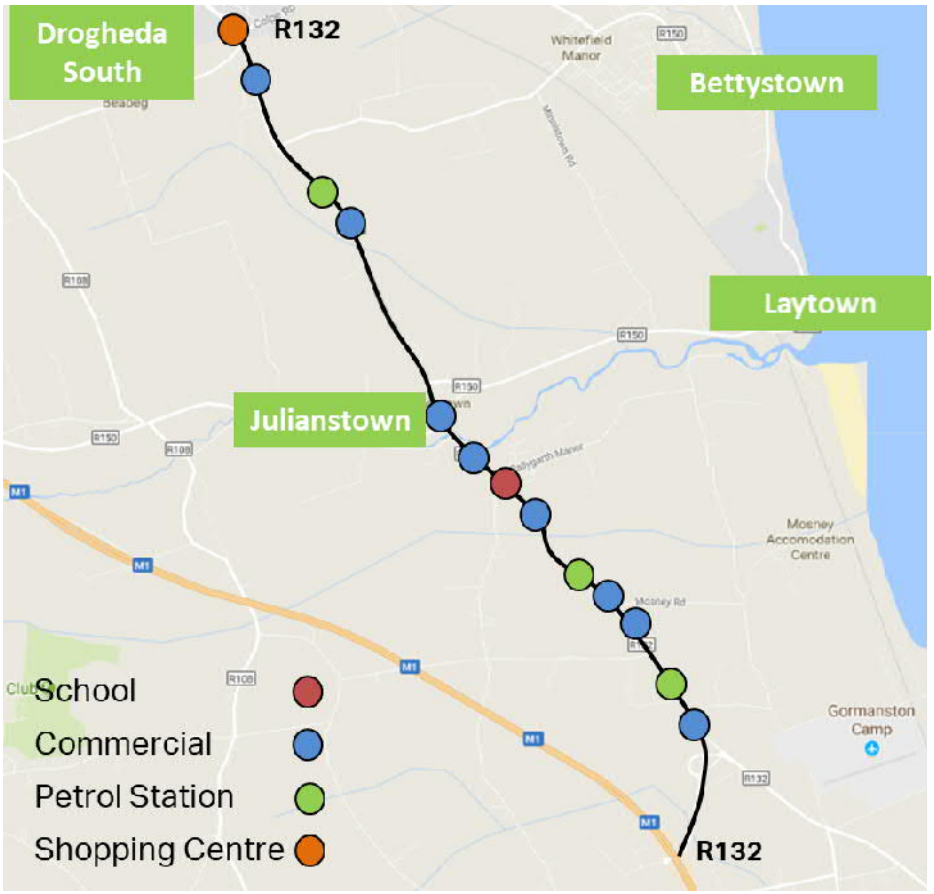


In the Meath County Development Plan (2013- 2019), Julianstown is classed as a commuter village due to its proximity to the large employment areas in Dublin, or other growth town. The following relevant Objectives and Policies specifically addressing transport and mobility in Julianstown are:

- Cultural Heritage OBJ 25 - To support proposals from local communities and community organisations which seek to have a Village Design Statement for a particular village drawn up through a process involving community participation, the Heritage Council and the Council's Planning Department, subject to availability of resources.
- Strategic Policy 1 - To promote the future development of the village as a compact settlement with a pedestrian friendly environment, a legible and coherent physical form, and a variety of land uses and amenities.
- Strategic Policy 3 - To address traffic problems on the R132 Regional Road through Julianstown.
- Movement and Access OBJ 1 – To investigate the effectiveness of, and if appropriate, progress the implementation of, traffic management and traffic calming options and environmental measures through Julianstown village in conjunction with the National Road Authority with a view to providing an enhanced and safer environment for the village.
- Movement and Access OBJ 2 - To improve linkages along the R150 between Julianstown and Laytown including investigating the improvement of cyclist and pedestrian connectivity and facilities between both centres.
- Movement and Access OBJ 3 - To improve linkages along the R132 between Julianstown and Drogheda.
- Movement and Access Pol 1 – To require the provision of short-term on-street vehicle parking where appropriate.

1.1. Background

With a population of 681 people, Julianstown has two main residential estates - Preston Park estate to the north of the village and Ballygarth estate to the south of the village. Whitecross National School is the one primary school, with 450 students. It is located along the R132, to the south of the village. Julianstown has an active voluntary Julianstown & District Community Association. It is a democratically elected representative community organisation, that maintains the village and its environs, governs a village community garden and organising social events. Julianstown village is a designated Architectural Conservation Area, within Volume I of the County Development Plan 2013-2019. The village was chosen by the Heritage Council and Meath County Council as the rural Pilot Project for the national Village Design Statement Programme in 2008. Julianstown has historical and natural heritage, with the river Nanny Estuary and Shore Special Protection Area designated a Natura 2000 site beginning 1 km east of the Village.



1.2. Traffic Volumes in Julianstown

High traffic volumes pass through the R132 at Julianstown on a daily basis. With a population of only 681 people, the Average Annual Daily Traffic (AADT) count of 20,472 in 2018 is high for the size of the village. It is unsurprising, as Julianstown along with Laytown, Bettystown and Drogheda are popular for commuting to Dublin. They form the northern end of "Corridor A", in the Transport Strategy for the Greater Dublin Area 2016-2035. The car mode share for all trip purposes in this corridor is 72 per cent, with public transport at 12 per cent.

Drogheda, County Louth, is the largest town in Ireland, with a population of 40,956 in 2016. Transport demand pressures are increasing. There is a significant amount of population and employment growth planned for south Drogheda, and overall, this corridor between Drogheda to Dublin city centre (including Balbriggan, Swords and North inner-city Dublin) is forecast as having the highest growth in transport demand up to 2025.[1]

The R132 passes through Julianstown, meeting Junction 7 on the M1 approximately 4km south of the village. The R150 traverses the R132 in Julianstown – linking eastward-westward traffic from Duleek (approximately 10km west of the village) to the coastal towns of Bettystown and Laytown.

Increased traffic volume in Julianstown resulted from population growth and the location of the toll booth on the M1 (between Junctions 7 and 8), which opened in 2003. The M1 has taken considerable traffic away from Drogheda Town Centre for through traffic, but the location of the toll booth did not reroute the potential number of vehicles for Drogheda town centre trips. Up to 80 per cent choose to travel via the R132 instead of routing via Junction 8 or 9 where they would pay a toll. Historically, this was the main route south from Drogheda

Average Annual Daily Traffic (AADT) peaked at over 24,666 vehicles in 2002. This fell to 18,946 vehicles in 2004, a drop that can be attributed to the opening of the Dunleer to Dundalk section of the M1 in 2001, and the Drogheda Bypass section of the M1 in 2003. Following the Global Financial Crisis in 2008, a dip in the volumes of traffic is evident, but as the economy rebounded, the traffic volumes have increased to 2005 levels again, with an AADT value of 20,472 for 2018.

[1] NTA, Transport Strategy for the Greater Dublin Area, 2016-2035

Overall, between 2004 and 2018, traffic volume travelling through Julianstown village has been relative static, although the volume observed passing through the M1 toll (between Junctions 7 and 8, north east of Julianstown) during that same period has increased dramatically (Figure 1.1). This demonstrates that the M1 mainline is accommodating the strategic traffic growth across the region. The use of the R132 has remained relatively static as it provides local access to Duleek, Bettystown, Laytown and South Drogheda, accommodating local growth in these areas.

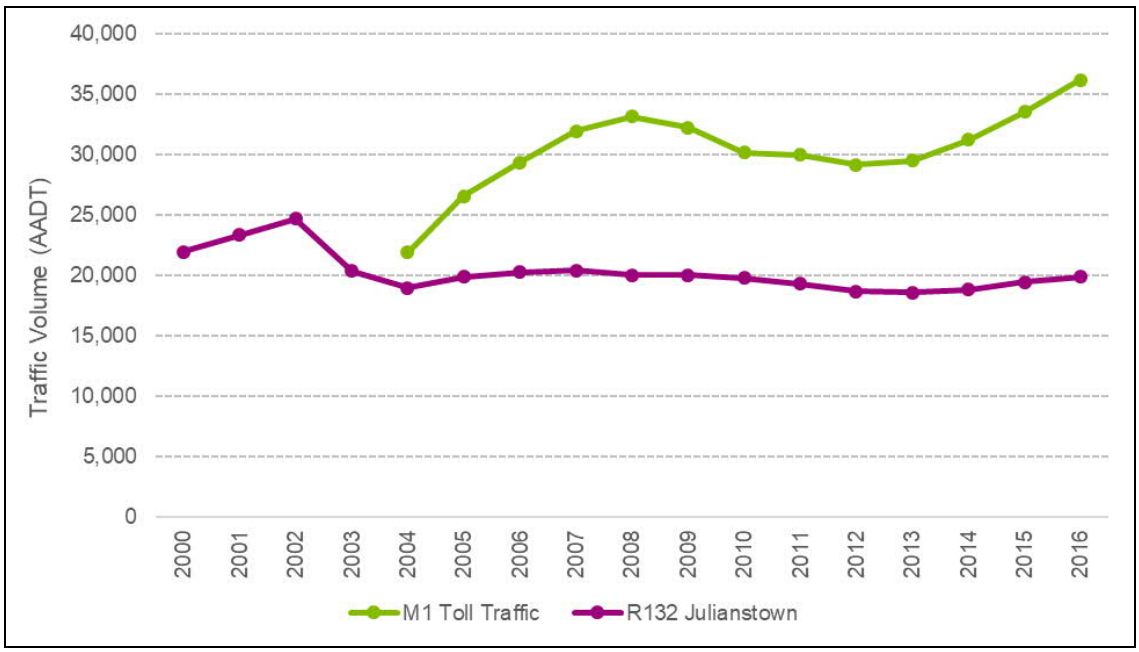


Figure 1.1 Julianstown R132 Average Annual Daily Traffic count and M1 Toll Traffic Data

The volume remains problematic for Julianstown. The R132 is a standard carriageway, with a speed limit of 50km through the village. The staggered crossing of the R150 across the R132 results in significant traffic delays as vehicles travel from eastward to westward direction. The average weekday traffic profile shows total morning and evening peak traffic at 1,600 vehicles per hour. The inter-peak volume is above 1,000 vehicles per hour, indicating constant high volumes of daytime traffic (Figure 1.2). Arguably, the R132 is not fit for purpose, given the large volumes of daily traffic.[2]

[2] Transport Infrastructure Ireland, Design Manual for Roads and Bridges.

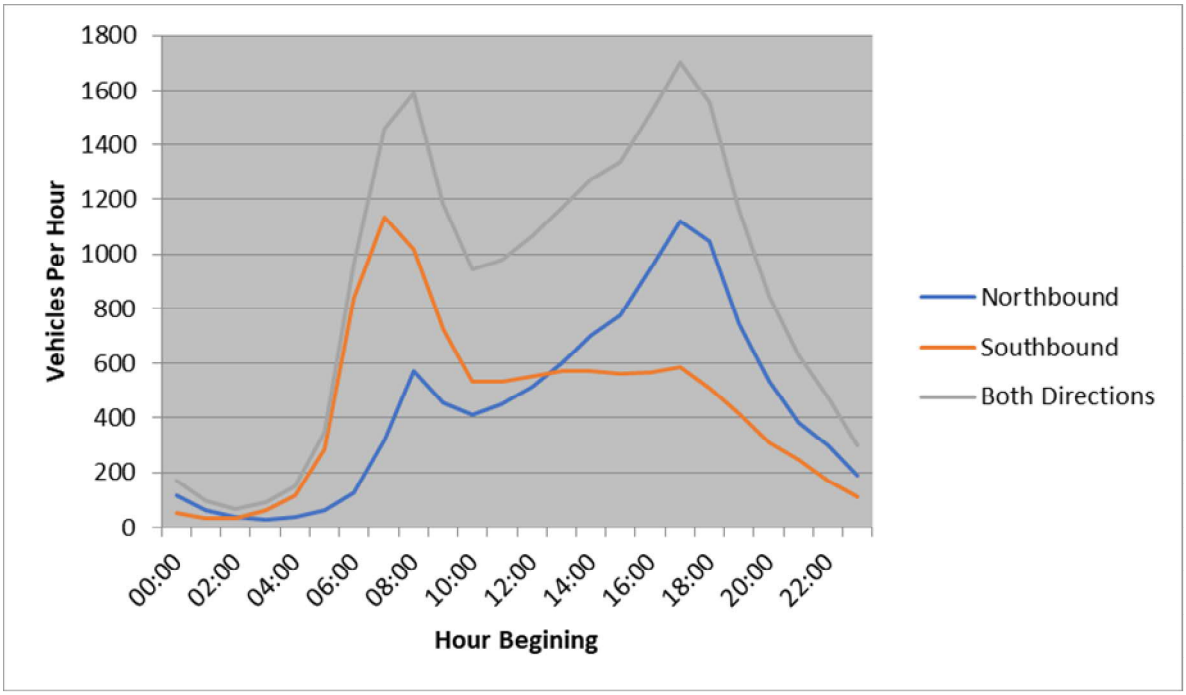


Figure 2.2 Julianstown Average Weekday Traffic Profile

The morning traffic profile is shown on Figures 1.3 and Figure 1.4, showing the direction of vehicles at two junctions, linking the R132 to Bettystown and to Laytown, showing the southerly direction that vehicles travel. Figure 1.4 shows the cumulative vehicle count for southbound traffic between 8 and 9am, the morning peak time in 2018.

Figure 1.3: Southbound morning peak vehicle flow

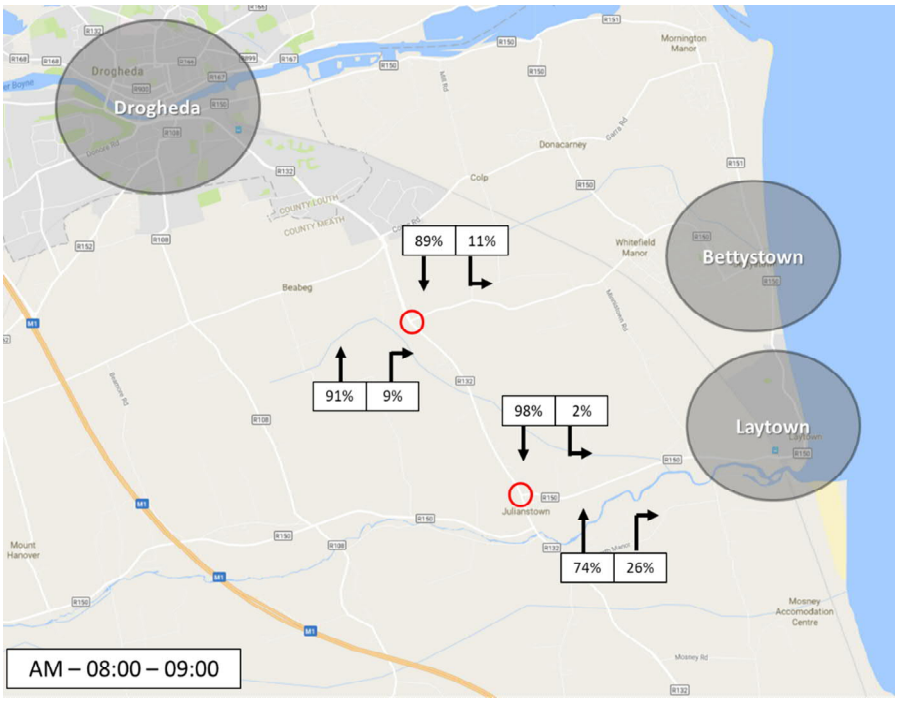
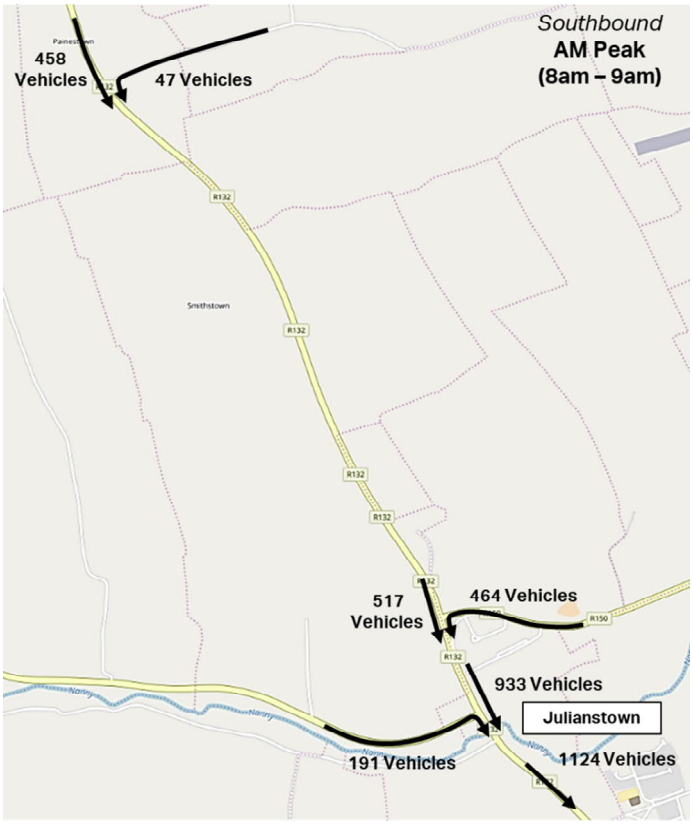


Figure 1.3: Southbound morning peak vehicle flow



Source Google, 2018

1.3. Objectives

Meath County Council wants to alleviate issues arising from high traffic volumes in Julianstown, which is suffering from noise, pollution and congestion. The preferred option also needs to:

- reduce journey time on the R132, thereby increasing journey time reliability;
- improve safety conditions for all road users, but particularly for active modes of transport (pedestrians and cyclists);
- contribute to health benefits, with reductions in air pollution, vibration and noise in Julianstown Village;
- improve resilience of transport network in north-east Meath and south Louth, given increased future demand on transport networks.

Several studies, technical reports and traffic modelling were completed between 2012 and 2018, identifying various options for relieving the traffic demand in Julianstown. These included:

Julianstown Assessment Technical Note for the NRA Traffic Management & Planning (AECOM, 2015)

M1 Junction 9 Slip Road Tolling Study Technical Note: (Roughan & O'Donovan and AECOM, 2012)

R132 Julianstown Assessment Technical Note (AECOM, 2017)

Technical Note 2 – M1 Junction 9 Toll Slips Review (AECOM, 201)

This report uses the traffic demand modelling undertaken in the above studies to assess the various options for relieving the traffic demand in Julianstown. This forms a preliminary assessment of Stage 1 Pre-Appraisal/Preliminary Appraisal requirements, of the DTTaS Common Appraisal Framework.

AECOM have not costed the proposed solutions in detail. Indicative construction costs based on historic costs (with a 25 per cent inflation allowance) for the options are used as estimates, given no detailed design is available at this stage. Several assumptions are made, to undertake this analysis.

2. Methodology & Assumptions

This section discusses the Options appraised, the rationale for their selection and the sources that were used to assess each Option. Traffic flows were modelled, using a Local Area Model, to see the effects of different options on traffic volumes in the AECOM 2015 study. This section elaborates on these options, noting that a local bypass of Julianstown emerged as the preferred options in these previous assessments. This preliminary assessment considers alternative modes of transport to alleviate the traffic volumes, but suggests that increased public transport will not achieve the objectives set out in 1.3. However, we do consider that a public transport option should be included in a more detailed appraisal, as this study did not include any public transport modelling component.

2.1. Options

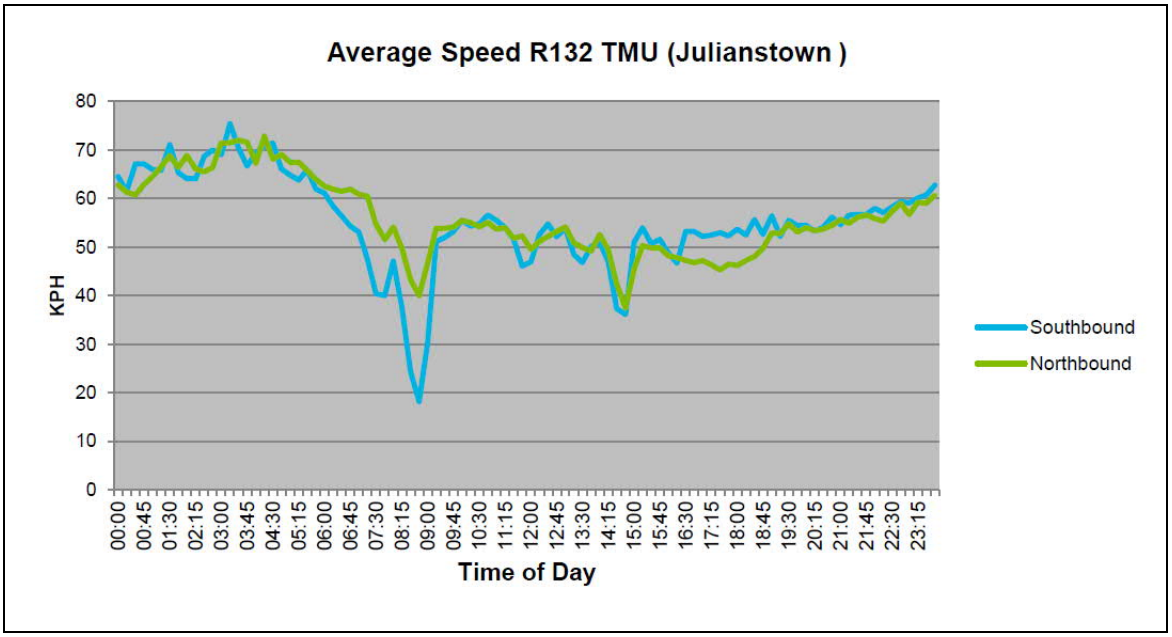
Five Options were selected for appraisal, including a 'do nothing' option. These are described below, with accompanying assumptions.

2.1.1. Option 1. 'Do Nothing'

The 'Do Nothing' option will not improve the traffic demand in Julianstown, with AADT levels at 20,472 and forecast to increase given the capacity for future development in the South Drogheda area. The R132 is the most direct and fastest route to the M1 for residents of southeast Drogheda and residents of Bettystown and Laytown. The population of this area has almost doubled since 2002. Current Census data shows that a significant portion of the additional residents in these areas now commute to the Dublin metropolitan area. The R132 is a rational choice for travel between these areas and Dublin.

The impact of school drop-offs, in combination with peak commuting traffic was assessed between the R132/R150 junction and the R132/Mosney Road junction (in AECOM Technical Note, November 2017). A comparison of journey times on this stretch of the R132 is shown in Figure 2.1. These observations indicate that journey times can increase by as much as 1 minute and 45 seconds during peak times on this 2.6km section of road.

Figure 2.1 Average daily speed of Julianstown traffic over 24 hours



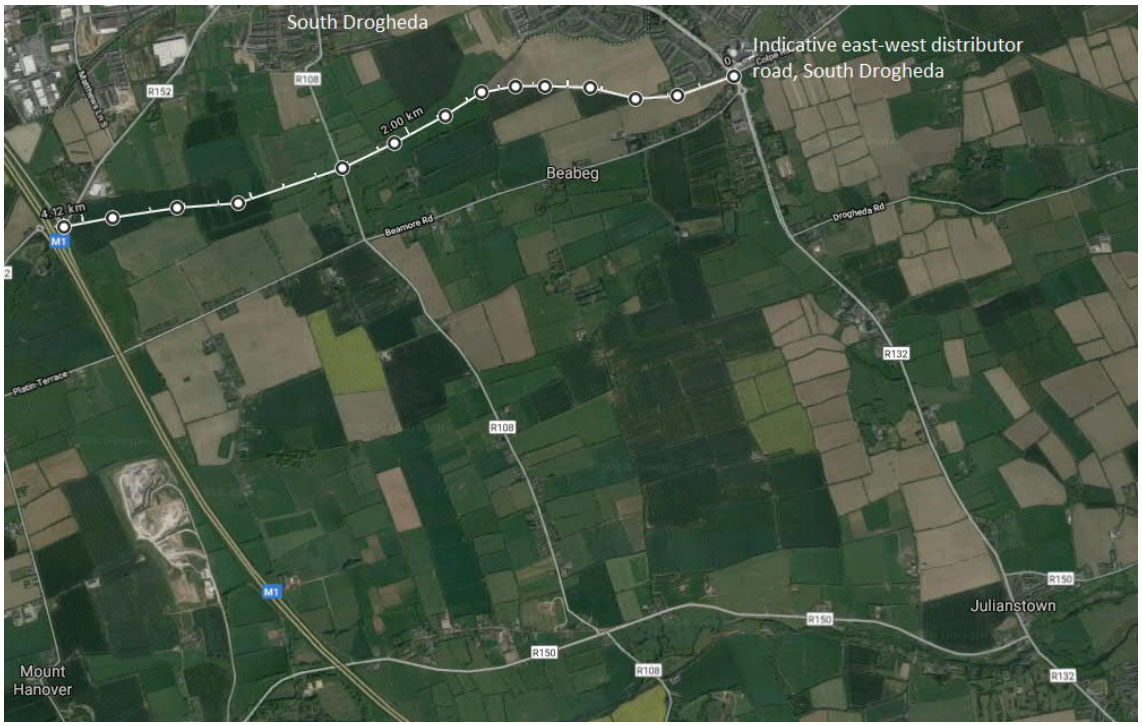
It is noted that planned investment will continue in the 'do nothing' scenario, including design changes in the village itself, and electrification of the northern commuter line from the existing end of the DART network in Malahide on to Drogheda. The passenger load of the combined Drogheda, Bettystown and Laytown stations are estimated to increase to 1,900 by 2033 when the DART electrification is complete. The number of passengers boarding at Drogheda is expected to increase from 1,700 to 2,400. Despite offering more capacity on public transport, there is a significant amount of population and employment growth planned for south Drogheda, and overall, a 'do nothing' approach will likely see the traffic through Julianstown increase.

2.1.2. Option 2. East-west distributor road to the south of Drogheda

An indicative alignment for a standard single carriageway regional road is given in Figure 2.2. This is a 4.12km distributor road, intended to take traffic from South Drogheda to the M1. This was selected in the AECOM 2015 study, as it was included in the land use zoning objectives map of the Meath County Development Plan. We assumed that the new distributor road would be single carriageway. We used indicative construction and land costs, based on previous scheme construction costs estimates and previous scheme land and property cost estimates for a distributor road in the Greater Dublin area, but stress that a more considered appraisal of the actual costs should be undertaken in ensuing appraisals at later Stages.

The indicative figures used for land is €0.92 million per km of road built, and construction costs are €3.36 million per km of single carriage road constructed. We assumed an annual maintenance cost of €20,000 per km of new road after construction. The timeframe chosen to measure benefits of the investment was 60 years, discounted at 5 per cent per annum as per the Public Spending Code.

Figure 2.2 Indicative east-west distributor road, South Drogheda



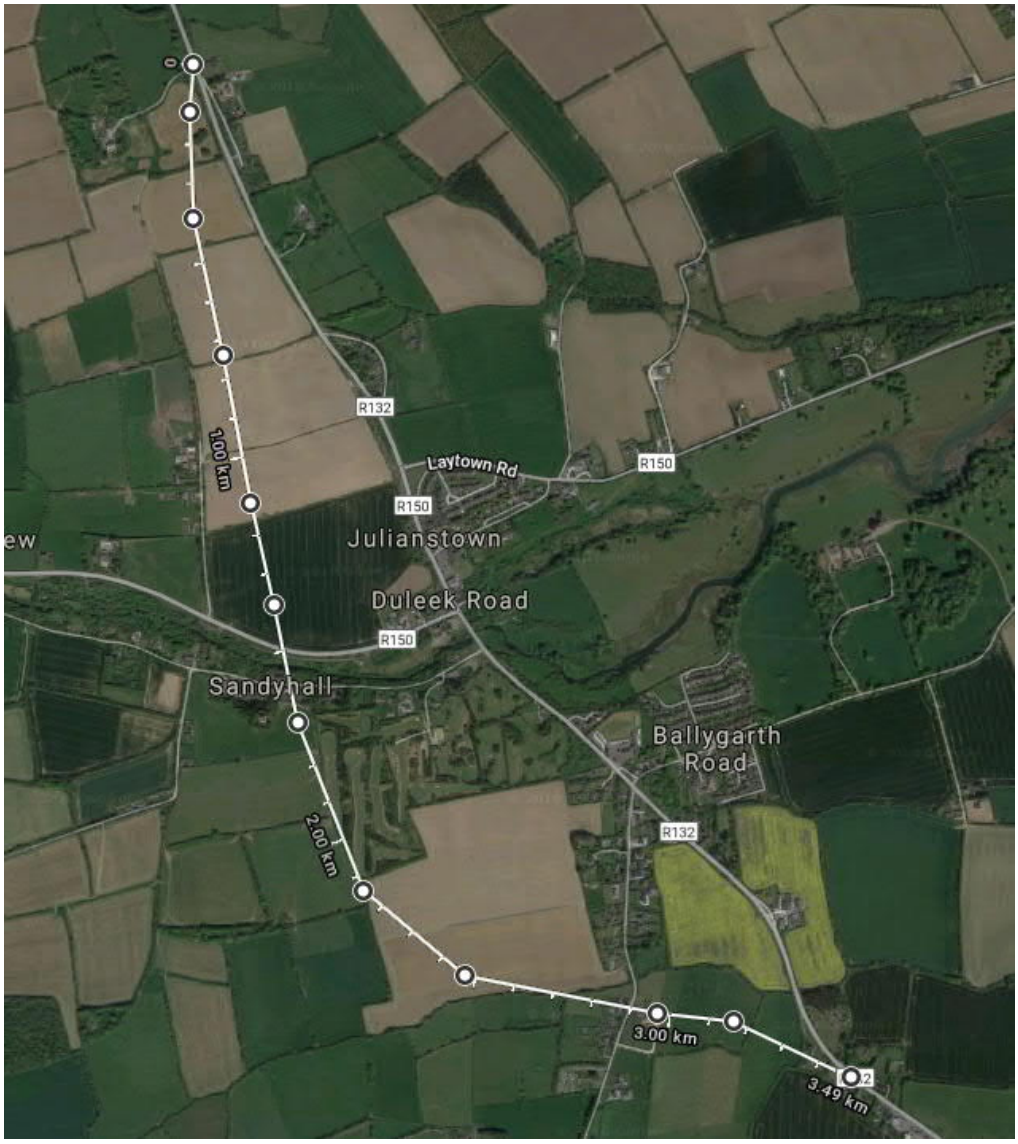
The traffic modelling undertaken to assess this scenario showed a displacement effect of traffic from the existing Junction via the R152 to the new south Drogheda distributor road. There was no change on traffic volumes through Julianstown, and minimal effects on total vehicle-km travelled and time spent travelling (drops of 0.05% and 0.31% respectively). A very small positive impact on M1 Tolls (between Junctions & and 8) resulted, an annual increase of 0.1 per cent.

As the South Drogheda distributor road does not alleviate the traffic volumes in Julianstown, it is suggested that it should not be considered further, for more detailed appraisal.

2.1.3. Option 3. Bypass of Julianstown

An indicative alignment for a standard single carriageway regional road is given in Figure 2.3. Arguably, given the current traffic volumes in Julianstown, a dual carriageway option should be explored in future appraisal, and the location and interaction with the R150 Laytown road should be given further consideration. This indicative road reduces the majority of traffic from the existing R132 through Julianstown. Modelled AM peak traffic fell from 1,525 vehicles per hour in the base or 'do nothing' scenario to 284 vehicles per hour. This is a reduction of 82 per cent of the traffic volume through Julianstown.

Figure 2.3 Indicative Bypass of Julianstown

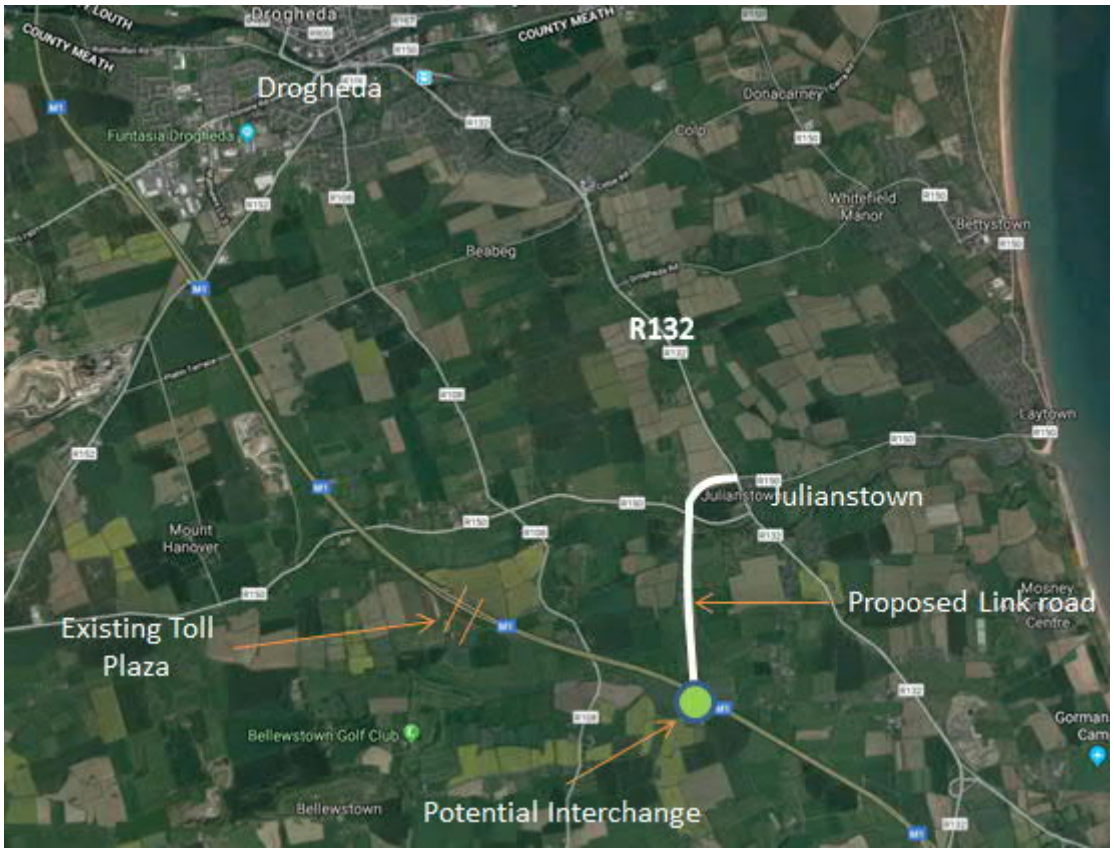


As per Option 2, the same indicative figures land and construction cost figures were used: land is €0.92 million per km of road built, and construction costs are €3.36 million per km of single carriage road. We assumed an annual maintenance cost of €20,000 per km of new road after construction. The timeframe chosen to measure benefits of the investment was 60 years, discounted at 5 per cent per annum as per the Public Spending Code.

2.1.4. Option 4. New Link road from the M1 (north of Junction 7)

The third new road solution for Julianstown traffic that was considered was a Link road, extending from the R150 Laytown junction (at north end of Julianstown) to the M1. This would require a new connection on the M1, and is estimated to be 2.18km in length.

Figure 2.4 Link road with new interchange on the M1



Modelling suggested that this road would take 25 per cent of Julianstown through traffic only. It would also have a displacement effect on M1 traffic, with an increase usage of this road as a route to Drogheda, enabling the avoidance of tolls at the current location of the Plaza between junctions 7 and 8.

2.1.5. Option 5. Invest in other modes of transport

The assessments undertaken by AECOM for TII and the NTA to date were focused on road solutions to the traffic volumes in Julianstown. After calculating the cost of constructing the bypass – the preferred option in the previous studies – the option of investing that level of expenditure into public transport was explored. This was an iterative process, with the option qualitatively constructed after the costs for the three road construction options were undertaken. Note, no transport model was used for this Option analysis, and the scenario is built upon existing transport mode patterns and information available on modal shift patterns.

Drogheda and Julianstown are serviced by the Route 101 Bus Eireann bus service, with approximately 40 buses servicing the route per day. The route operates every 20 – 30 minutes from Drogheda bus station to Talbot Street in Dublin City Centre utillising the R132 road for a large portion of its journey.

The northern railway line runs to the east of Julianstown, through Laytown and onto Drogheda. With the electrification of the DART line to Drogheda, a modal switch is expected, with a 46 per cent increase in DART usage coupled with an 11 per cent decrease in regional buses. The expected increase for the Drogheda/Laytown southbound DART is from approximately 1,500 passengers in one morning hour to 3,060, with the new electrified service.

As per Table 2.1 below, there is a higher dependence on the car to get to work for the people of Julianstown, Bettystown, Laytown and Drogheda than the national average. Once school trips are included, the public transport share increases above the national average for the three areas, indicating a higher reliance on public transport for school journeys.

Table 2.1 Mode of Transport to Work and Work & School trips combined

	Work trip only		**Work and school trips combined**	
	Car	*PT*	*Car*	*PT*
Julianstown	78%	8%	58%	18%
Bettystown/Laytown	68%	15%	58%	23%
Drogheda	63%	9%	54%	14%
All of Ireland	62%	9%	58%	13%

PT = Public Transport and includes private coach or minibus

Source Census 2016 POWSCAR data

For this option, we considered building a Park&Ride bus stop, with a dedicated Peak Time express service to Dublin Airport and to Dublin city centre.

It is not possible to give a definitive answer to potential modal shift to public transport (as this was not been modelled to date). However for the purpose of this scenario, we assume that a "minor modal shift could occur" and have made an assumption of a range of between 1 and 3 percent modal shift to public transport for this scenario. We expect the modal shift to be minor as there are existing bus and rail services. While some corridors are an exception, the majority of the Greater Dublin Area bus network is characterised by fragmented bus priority, frequent delays and unreliable services, which limit its appeal. Further traffic modelling is required to appraise this option.

2.2. Methodology

As indicated in the project background, this report has adopted a methodology compliant with the Public Spending Code and Common Appraisal Framework.

The Order of Magnitude Costs of proposed Options exceeds €5 million for alleviating the traffic problems in Julianstown but is below the €20 million threshold mandating a full Cost-Benefit Analysis or Cost-Effectiveness Analysis. Note that these figures are indicative, as the route selection and design are not determined at this point. The process of elimination of options was undertaken using a preliminary Multi-Criteria Analysis in this case. As Multi-Criteria Analysis assesses qualitative outcomes, a common scale is required to allow a level of comparability between various outcomes. The seven-point scale is from Project Appraisal Guidelines to fulfil this function, and colour coded to add further clarity (Table 2.1).

Table 2.1: Qualitative Rating Scale

Description of effects	Score
Major or Highly Positive	7
Moderate Positive	6
Minor or Slightly Positive	5
Not Significant or Neutral	4
Minor or Slightly Negative	3
Moderately Negative	2
Major or Highly Negative	1

Source: Transport Infrastructure Ireland (2017)

Multi-Criteria Analysis will be supplemented with the calculation of the Economic Net Present Value (ENPV) for each option in order to fulfil economic analysis requirements. Financial Analysis is to be completed per evaluation guidelines; this will be satisfied through the calculation of the Financial Net Present Value (FNPV). Sources of Funding Analysis will not be carried out in this case as the project is expected to be solely funded by the exchequer.

2.3. Assumptions

A number of assumptions are required to carry out an economic appraisal. Many of these assumptions such as discount rates are by the Department of Public Expenditure and Reform. A summary of assumptions adopted for this project are identified in Table 2.2.

Table 2.2: Appraisal Assumptions

Description	Relevance	
Discount Value	Discounting future values to take into account the time preference of money	5%
Construction Period	Period in which an asset is being constructed or prepared, prior to entering its useful economic life	1 Year
Construction Costs	Risk of cost inflation, or uncertainty of costs, at this preliminary phase	25%
Maintenance Costs	Ongoing costs after road is complete	€20,000 per km
Useful Economic Life: Roads	Economic Appraisal/Financial Appraisal	60 Year
Time Savings	In-work and commuter values of time as described in CAF and inflated by a productivity index	-
Conversion of AM peak hour model data to annual data	Assumption that benefits of options accrue in 6 hour timeframe only, for 253 working days in the year	1518 factor

Source: AECOM (2018)

This section has introduced the options, introduced the appraisal methodology, and described the assumptions used for this report. This information underpins the findings of the next three sections:

- Multicriteria Analysis
- Financial Appraisal
- Economic Appraisal.

3. Multicriteria Analysis

Multi-Criteria Analysis is an appraisal tool used to evaluate alternatives based on the identified criteria, ranked on the basis of an aggregation procedure. The appraisal criteria are made up of economic, safety, environment, accessibility and social inclusion, integration and physical activity components. There are appraisal sub-criteria associated each criteria category. The ranking system is on a Likert scale, between 1 and 7; ranging from highly negative (score of 1) to highly positive (score of 7).

Figure 3.1 Preliminary Multi-Criteria Analysis for Regional and Local Road Capital Projects – Appraisal Criteria, Sub-Criteria and Objectives

Appraisal Criteria	Appraisal Sub-Criteria	Objective
Economy	Transport Efficiency and Effectiveness	Reduce journey times? Sufficient cross section provided?
	Wider Economic Impact	Improve economic performance of area, e.g. reduce transport costs
	Transport Reliability and Quality	Improve journey time reliability, e.g. improve Urban Congestion, provide missing link to maximise return on investment
Safety	Collision Reduction (PIA/mvkm)	Reduce collision rate using RSA collision database for subject road section
	Security	Improve safety conditions for all road users, e.g. lighting, pedestrian crossing
Environment	Air qulaity	Impact on Emmissions
	Noise and Vibration	Impact on road related noise and vibration
	Landscape and Visual Qty	Impact on heritage sites
	Biodiversity	Impact on biodiversity, e.g. Natura site / a particular habitat
	Cultural, Archaeological , Architectural Heritage	Impact of scheme on Archaeological sites or national monument
	Land Use	Impact on agricultural holdings/ farm severance
	Water Resources	Impact on water courses
Accessibility and social inclusion	Vulnerable groups	Impact on accessibility to key facilities, such as employment, education and healthcare for all road users, but in particular vulnerable groups
	Deprived Geographical area	Impact on accessibility to deprived areas e.g. a particular Rapid or CLAR area
Integration	Transport Objectives	Connectivity to NR's, Ports, Airports, Railways
	Land Use Integration	To meet Transport Objectives, e.g. planning documents, local, county, regional, national
	Geographic Integration	Enhanced regional accessibility and Connection between towns flagged in Nat planning Document
	Integration with other Governemnt Policies	Scheme supports Govt policy e.g. strengthen rural economies and communities
Physical Activity	Opportunities for pedestrians and cyclists	Enhancements for pedestrians and cyclists e.g. footpaths, wider Hard shoulder

The output of AECOM's MCA analysis for the five options under assessment is presented in Figure 3.2.

Option 1, 'Do Nothing' option is not a tenable option in this analysis, scoring negatively on most sub criteria. The combined score for this option is 59. This was the only option that did not have a positive impact. A negative scenario is any which scores less than 76.

Option 2, the 'South Drogheda distributor road' scored positively on the economic indicators, but was neutral in terms of most other appraisal criteria. This option scored a combined value of 80.

Option 4, 'Link road from M1 to R132', scored positively on Economy criteria, signifying an ability to relieve the traffic volumes passing through Julianstown, thereby improving physical activity opportunities in the village itself. A positive score on the accessibility criteria was due to the ability to alleviate congestion in and around the school.

Option 5, 'Public transport investment' was neutral for most categories, but scored highly for the Integration criteria, and alignment with wider societal transport goals. It did not improve the Economy criteria significantly, as there is not enough information to assess the potential impact on traffic through the village. However, investment in additional public transport was considered to have limited transport efficiency on its own; busses share the existing road network. We suggest that this option is explored in more detail in subsequent appraisal stages.

Option 3, 'Local bypass' attained the highest score out of all the options. It had positive values for economy, safety and environment. It was the option with the greatest ability to relieve the traffic volumes travelling through Julianstown. It also scored highly on noise and vibration reduction in the village, and on heritage values (as it enabled other heritage objectives to be pursued). This option scored negatively for land use, as all the 'do something' options did. It scored negatively on the transport objectives, as it does not reduce dependency on private vehicles.

Note biodiversity and water resources criteria were not considered in great detail in this preliminary appraisal, given that all the routes and options are indicative. It is noted that the River Nanny Estuary and Shore Special Protection Area lies to the north-east of Julianstown.

It is clear from this analysis that the preferred Option 3 has the most beneficial outcomes. Option 4 improves the core objective of traffic alleviation in Julianstown, while Option 5 requires more detail to assess the extent of achieving traffic alleviation objectives, but scores highly in terms of broader societal objectives. Option 2 marginally improves traffic volumes across the modelled network, but did not improve Julianstown traffic, and did not score positively on other criteria. Option 1, do nothing, is the only option that led to negative outcomes, with increasing traffic pressure in Julianstown, with accompanying associated negative effects.

Multicriteria Scoring for five options

Appraisal Criteria	Appraisal Sub-Criteria	Option 1	Option 2	Option 3	Option 4	Option 5
		Do Nothing	East west distributor road, south of Drogheda	Local Bypass	New link road from M1 to R132, north of Julianstown	Public transport investment
Economy	Transport Efficiency and Effectiveness	2	5	7	5	4
	Wider Economic Impact	3	5	5	5	4
	Transport Reliability and Quality	3	5	5	5	5
Safety	Collision Reduction (PIA/mvkm)	4	5	5	4	4
	Security	3	4	7	5	5
Environment	Air quality	3	5	5	4	5
	Noise and Vibration	2	4	7	5	4
	Landscape and Visual Qty	3	4	5	4	4
	Biodiversity	4	4	4	4	4
	Cultural, Archaeological , Architectural Heritage	2	4	6	4	4
	Land use	4	3	3	3	3
	Water resources	4	4	4	4	4
Accessibility and social inclusion	Vulnerable groups	3	4	6	5	4
	Deprived Geographical area	4	4	4	4	4
Integration	Transport Objectives	2	4	3	4	5
	Land Use Integration	3	4	5	5	7
	Geographic Integration	3	4	4	4	7
	Integration with other Government policies	4	4	5	4	4
Physical Activity	Opportunities for pedestrians and cyclists	3	4	5	5	5
	Total MCA Score	**59**	**80**	**95**	**83**	**86**

Ranking system

7=Major or highly positive	6=Moderately Positive	5=Minor or slightly positive	4=Not significant	3=Minor or slightly negative	2=Moderately negative	1=Major or highly negative

4. Financial Appraisal

A preliminary financial appraisal of the new roads was undertaken. The purpose of this is to weigh up the likely costs and benefits of a project before deciding on the correct course of action.

Financial appraisal includes the calculation of the net cash flows over the economic life of the asset. Financial flows will be discounted to account for the time value of money. Sources of funding analysis will not be completed. The indication to AECOM is that full funding will be sought from the exchequer.

Financial evaluation is used in the private sector to inform investment decisions. Within the public sector, the role of financial evaluation is less pronounced. As financial appraisal only considers monetary flows, it fails to capture the non-monetary objectives of the public sector. It therefore has limited potential to determine whether a project is socially valuable. Despite these drawbacks, financial analysis is useful to the exchequer as a budgetary planning and management tool.

4.1. Investment Costs

Construction costs per km of road built were used for the indicative routes identified in the options. These costs were taken from the recent construction of a distributor road in the Greater Dublin Area. We stress these costs are indicative only. A cost price inflation factor of 25 per cent was included, to allow for the uncertainty of these figures, and given that no design specifications are available at this point. These figures are shown in Table 4.1

Table 4.1: Investment Calculations, Nominal, 2018 €million

Option	Construction Costs (2018€ million)	Land and Property Costs (2018€ million)	Total (2018€ million)
Option 1 a 'do nothing', or baseline scenario/option			
Option 2 east-west distributor road to the south of Drogheda	13.84	4.73	17.75
Option 3 local bypass of Julianstown	14.66	4.01	18.67
Option 4 new link road from the M1 to the R132 north of Julianstown	9.11	2.49	11.60
Option 5 investment in other transport modes	unknown	2.5	Unknown

Source: AECOM (2018)

Options 2 to 4 result in a net increase in road surface area, so an increase in annual operating/maintenance costs of €20,000 per kilometre was included.

Revenues

The 2015 transport modelling of the three road options identified revenue impacts on the M1 toll road. These revenues were included in the financial analysis, but excluded from the economic analysis. For the South Drogheda distributor road and the Julianstown bypass, M1 Toll revenue increased marginally. The new link road from north of Julianstown to the M1 (including a new junction, south of the toll gates) could result in 5 per cent drop in toll revenue. This is because it enables toll avoidance via the new link road – the road would not have the time delays that the current R132 has, and would be more attractive for more Drogheda traffic.

Table 4.2 Modelled revenue impacts at M1 toll plaza

	Base	Option 2	Option 3	Option 4
AM Peak Traffic Flow (vehicles per hour)	2,330	2,333	2,337	2,221
Annual Average Daily Traffic	72,066	72,145	72,315	68,341
Annual Revenue Estimate	€26.3 million	€26.3 million	€26.4 million	€24.9 million
% Change		+0.1%	+0.3%	-5.2%

No other revenue impacts were identified or analysed at this preliminary stage.

Financial Net Present Value (FNPV)

Financial Net Present Value (FNPV) is the sum of discounted net economic flows over the appraisal period. The purpose of this metric is to estimate the total net monetary cost of a project over an appraisal period.

As the justification of most publicly constructed roads is primarily on economic grounds, and not financial, it is not surprising that the options resulted in negative FNPV. However, the FNPV for the new link road significantly spirals, given the toll avoidance that would result in lost income to the M1 public private partnership.

Table 4.2: Financial Net Present Value Calculations after 60 years, Discounted

Option	€m
Option 1 a 'do nothing', or baseline scenario/option	0
Option 2 east-west distributor road to the south of Drogheda	-€18.571 million
Option 3 local bypass of Julianstown	-€17.829 million
Option 4 new link road from the M1 to the R132 north of Julianstown	-€33.016 million

Source: AECOM (2018)

In conclusion, this section has estimated the budgetary implication of the three new road options proposed. Options 2 and 3 have a moderate negative FNPV, whereas the negative revenue impacts of option 4 are likely to rule it out for further consideration.

5. Economic Appraisal

The purpose of this section is to weight up the economic costs and benefits of a project before deciding on the correct course of action. Following on from the qualitative outcomes identified in the Multi-Criteria Analysis in the previous section, this financial and economic appraisal elaborates the options using preliminary quantitative data.

Quantitative outcomes will be captured through the calculation of an Economic Net Present Value (ENPV). Values will be represented incrementally versus the 'Do Minimum'. Calculations include construction and upkeep costs for the infrastructure along with projected benefits arising for projected commuter time savings and vehicle operating costs.

Economic evaluation is a technical exercise, care and attention is required so that errors such as double-counting, incorrect use of parameters and estimation inaccuracies are minimised. As the intended purpose of this report is for preliminary analysis only, we suggest that further work will be required to explore some of the parameters where full data was not available. We highlight these data and knowledge gaps.

Ultimately, economic evaluation requires the forecasting of future activity, which may yield mixed results. Every effort has been made to ensure that future forecasts within this report are as robust as possible and adhere to official evaluation guidelines.

Time Savings

Transport projects typically incorporate time savings as an economic benefit, and typically account for a significant share of the benefits. Values of time vary according to journey purpose. Benefits amount to an aggregation of time savings across many users. Construction of the three new road options all led to AM peak time savings. For the south Drogheda distributor road, this time was a total of 47 hours (accrued in a one hour modelled period). The figure for the Julianstown bypass was a saving of 118 hours, and for the Link road, a saving of 149 hours travelled. No data was available on time savings for the public transport option, however it is noted that it is unlikely that benefits for bus travel time would be realised under a 'do nothing' situation, as the buses share the roads with existing traffic. More data is needed on the effect of time savings if a dedicated bus lane were added onto any of the new roads.

Economic Net Present Value (ENPV)

Economic Net Present Value (ENPV) is the sum of discounted net economic and financial flows over the appraisal period. The purpose of this metric is to estimate the total economic net benefit of a project over an appraisal period accounting for the time value of benefits. These are discounted values, given the time-preference of money, with higher values in the near future.

Table 5.1: Economic Net Present Value Calculations, Discounted

Option	Economic Net Present Value €m	*(of which, discounted total costs €m)*
Option 1 a 'do nothing', or baseline scenario/option	0	*0*
Option 2 east-west distributor road to the south of Drogheda	€23.45	*€19.2*
Option 3 local bypass of Julianstown	€85.74	*€19.3*
Option 4 new link road from the M1 to the R132 north of Julianstown	€126.43	*€11.8*

Source: AECOM (2018)

This economic appraisal differs from the financial appraisal as it includes non-monetary flows. In particular, it is based on the time benefits that result from the options considered. The results will help steer the option selection decision. Option 4, the new link road has the highest ENPV, given that this option has the greatest time and kilometre savings of the three options. This is despite the loss of revenue to the M1 tolls – indicating that there is a significant behavioural change regarding route, under this scenario.

6. Conclusions

A 'do nothing' option is not considered tenable, given the qualitative scoring of the multi criteria analysis. 'Do something' options have a range of merits. The link road from the north of Julianstown to a new junction on the M1, south of the toll plaza reduced Juliantown's traffic congestion by 25 per cent only, but had the greatest time savings of the three road options analysed. However, it had high financial impact, with the loss of toll revenue and the diversion of traffic through the new link road. The South Drogheda distributor road had the lowest benefit to cost ratios out of the appraised road options.

Option 3, the bypass of Julianstown emerged as the preferred option in both the Multi-criteria Analysis and preliminary cost benefit analysis, although it should be noted that the public transport investment option was not fully costed at this time.

		Options/Scenario				
Category	Criteria Description	I	II	III	IV	V
Economy	**Transport Efficiency and Effectiveness:** Reducing journey times	2	5	7	5	4
	Wider Economic Impacts: Reducing transport costs	3	5	5	5	4
	Transport Reliability and Quality: Improving congestion	3	5	5	5	5
Safety	**Collision Reduction:** Road Safety Authority guidelines	4	5	5	4	4
	Security: Removing safety issues for all road users	3	4	7	5	5
Environment	**Air Quality**: Removes emissions from urban environment	3	5	5	4	5
	Noise and Vibration: Removes noise and vibrations from Village.	2	4	7	5	4
	Landscape and Visual Quality:	3	4	5	4	4
	Biodiversity: Natura 2000 sites, particular habitats.	4	4	4	4	4
	Cultural, Archaeological, Architectural Heritage:	2	4	6	4	4
	Land Use: Impact upon existing land uses	4	3	3	3	3
	Water Resources: Effect on water courses	4	4	4	4	4
Accessibility & social inclusion	**Vulnerable Groups:** access to schools	3	4	6	5	4
	Deprived Geographical Area: n/a	4	4	4	4	4
Integration	**Transport Objectives:** Strategic Connectivity	2	4	3	4	5
	Land Use Integration: Local planning objectives	3	4	5	5	7
	Geographic Integration: Enhanced regional accessibility	3	4	4	4	7
	Integration with other Government policies: Compatibility with wider policy	4	4	5	4	4
Physical Activity	**Opportunities for pedestrian and cyclists**	3	4	5	5	5
Benefit to Cost Ratio	30 Year Appraisal		1.56	3.9	3.35	Not
	60 Year Appraisal		2.25	5.8	4.28	calculated